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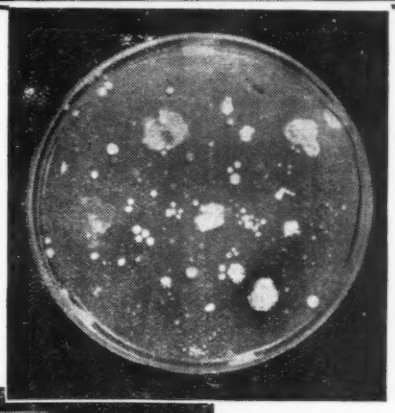

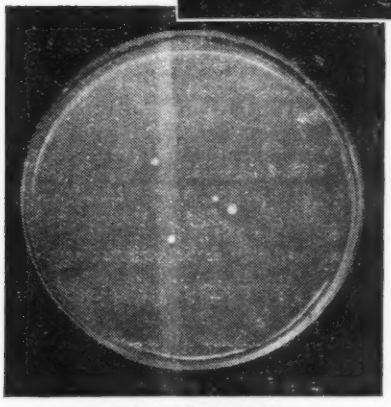

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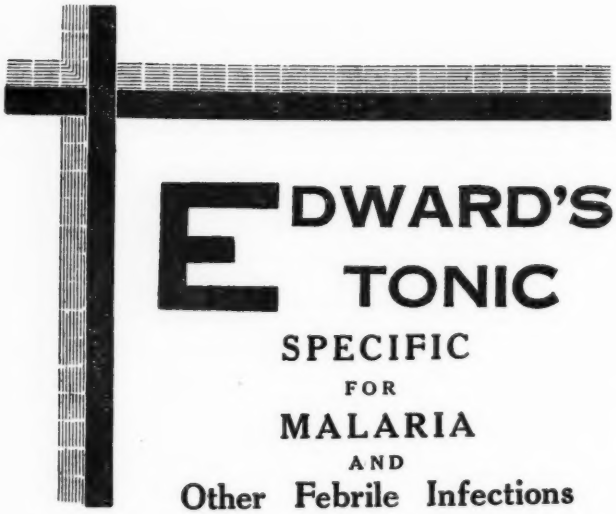

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JOURNAL
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Vol III] *Calcutta : October, 1933.* [No. 2

Solganal-B Treatment of Pulmonary Tuberculosis in the Jadabpur Tuberculosis Hospital

By K. S. RAY, M.A., B.SC., M.B., Ch. B. (Edin.),
Medical Superintendent and Hony. Visiting Physician
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Resident Medical Officer
S. K. SEN, M.B.,
Bacteriologist
H. N. DAS GUPTA, B.SC., M.B., and S. R. DEV, L.M.F.,
House Physicians

Jadabpur Tuberculosis Hospital (24 Pergs.), Bengal.

In this paper we have endeavoured to give a resume of solganal-B treatment of pulmonary tuberculosis as carried on in the Jadabpur Tuberculosis Hospital, Bengal, from the beginning of 1931 till the end of October 1932. Out of 42 patients considered, 25 have been treated with solganal-B alone and 17 with solganal-B in combination with artificial pneumothorax.

Composition and Mode of Action

With increasing use of organic gold preparations in the therapy of pulmonary tuberculosis many new drugs have been put on the market and solganal-B is one of them. Chemically it is aurothioglucose, the formula being $C_6H_{11}O_5S$ Au. It is manufactured by Schering and issued in six graduated doses. As a solution of the drug does not keep for more than two or three days, dry powders and the requisite amount of solvent are put up in separate ampoules in the same carton.

The mode of action of solganal-B is still a matter of speculation and no serious animal experiments appear to have been done even in Germany where it has been tested on animals for other diseases like syphilis. Workers with solganal-B[1] claim that it exerts no injurious effect on tubercle bacilli, anthrax bacilli and streptococci even in so high dilutions as 1 in 1000 in *vitro* but on the other hand, the diseases caused by these parasites are cured by dilutions of the drug from 1 in 40,000 to 1 in 60,000, estimated by the body weights of the animals treated. Further researches are needed to corroborate these findings, but if we accept them, we can safely assume that solganal-B has

no direct bactericidal action. Solganal-B loses much of its potency by oxidation or reduction and the possibility of its undergoing chemical change in blood and thereby exerting direct action, cannot be too seriously considered. Probably its beneficial effects are due, as FELDT and other workers[2] have defined, to its stimulating effect on the "mesenchyma" or the reticuloendothelial system from where the defensive forces of our body are activated. In their opinion solganal-B is stored up in vascular connective tissues and acts more or less as a metallic katalyser assisting in hurrying up defensive processes.

SELECTION OF CASES

Cases selected for solganal-B treatment in our series may be classified into the following groups :

(1)	In combination with A. P. to prevent activation or spread of disease in the contralateral lung	17
(2)	Chronic fibrocaseous or fibrocavernous, mostly bilateral or unilateral where A.P. had failed ...	7
(3)	Cases with recurrent haemoptysis ...	6
(4)	Advanced bilateral cases with profound systemic disturbance ...	6
(5)	Early infiltration ...	4
(6)	Cases where a course of tuberculin had failed to check the disease ...	2

According to MANDEL[3] it is contra-indicated in intestinal and renal tuberculosis. Laryngeal cases bear gold preparations quite well. In fact, MANDEL records an improvement in 10 cases of laryngeal tuberculosis. Our cases of glycosuria also bore it well.

DOSAGE

We adopted the following scheme of dosage in uncomplicated cases :

Start with 1/10 dose I (0.001 gm.) ; then ½ dose I (0.005 gm.), full dose I (0.01 gm.), repeat dose I, ½ dose II (0.025 gms.) dose II (0.05 gm.), repeat dose II, intervals between these injections being 3 clear days. Then dose III (0.1gm.), repeat dose III at intervals of 4 days. This is followed by dose III plus dose I (0.11gm.), dose III plus dose II (0.15gm.) and dose IV (0.25gm.) at intervals of 5 days. Dose 4 is then repeated at intervals of 7 clear days and after 5 such have been given, the interval is increased to 10 to 12 days. Our usual plan is to repeat dose IV till the desired results are obtained. In 3 cases we worked up to dose V (0.5gm.) at intervals of 10 to 12 days. One of these patients developed skin eruptions, but the other two bore it quite well. Where the fever was high and general health unsatisfactory, these doses were further subdivided and intervals correspondingly lengthened. In fact, in very advanced cases it was hardly possible for us to reach even full dose I. If a reaction occurred the same dose was repeated after all signs of reaction had disappeared.

The average number of injections per head in our series was 11.8 and the average interval 6.9 days. The average quantity of the drug per patient was 1.26 gm. the maximum given to a patient being 4.37 gm., Most of the patients who stood the drug well took from 2 to 3 gms. These figures are rather low in comparison with those of MANDEL who recommends a total quantity of 5 to 6 gms. per patient.

PRECAUTIONS AND TECHNIQUE

No elaborate precautions were necessary. It was found sufficient to examine the urine for albumin before and after injections. It was not given in the presence of active intestinal disorders and menstrual periods in women were as a rule avoided. The requisite amount of the drug was dissolved in solvent provided, sterile distilled water being used when intermediate doses were required. The ampoules whose contents looked dirty and did not dissolve in the solvent or dissolved to form a blackish instead of a dark brown solution were not used. Injections were given into the muscles of the upper arm and sometimes into the gluteal muscles. Lower doses were more or less painless, but higher doses caused certain amount of pain. If it was early and severe, application of ice

was found serviceable, later pains were relieved by hot applications.

A word of explanation is perhaps needed for preferring solganal-B, the intramuscular preparation to solganal and another similar drug manufactured by the same firm for intravenous use. We were guided in our choice by the following considerations :

(1) We have in sanocrysin another drug for intravenous use which has already established its claim to have a beneficial effect in certain types of pulmonary tuberculosis. The same cannot be said of solganal.

(2) Intramuscular route has the advantage of universal application. It can be easily given in women and children most of whom cannot take sanocrysin or solganal (intravenous) for want of a suitable vein.

(3) Solganal-B is about ten times less toxic than sanocrysin and four to six times than solganal. FELDT and others[4] have found that "therapeutic index," that is, the ratio between the smallest single dose sufficient to effect an acute recovery and the toxic or maximum tolerated dose was for solganal-B 1:75 as against 1 : 10 to 1 : 30 for solganal. Much larger doses of solganal-B could, therefore, be given safely.

REACTIONS AND COMPLICATIONS

The severe reactions that followed sanocrysin described by us in our article on sanocrysin treatment[5] were absent in these series. Injections of solganal-B were remarkably well borne even by advanced cases. The following reactions were, however, observed :

(1) Local—higher doses caused some amount of pain at the site of the injection. The pain was never very severe and seldom persisted beyond 24 hours.

(2) Focal—slight recrudescence of lung lesions was noticed even with small doses in very advanced cases. Early and suitable cases did not show any such reactions.

(3) Fever—followed 33 out of 499 injections or 6.6 per cent. It never rose above 2 degrees Fahrenheit than usual and came down to its level within 24 hours. Only in two cases did the fever persist from 4 to 5 days.

(4) Albuminuria occurred in one patient, aged 53, with advanced bilateral disease. It came about after 10 injections when a total of only 0.21 had been given. The patient had glycosuria in addition. As he left the hospital against our advice 5 days after albumin appeared in the urine, its further course could not be studied.

(5) Skin eruptions—also occurred in one patient only. He was being treated with A. P. combined with solganal B. We worked up to dose V and after 17 injections and a total of 2.68 gms. had been administered, patient developed skin rashes. These appeared as macular bluish black spots associated with much itching of the skin five days after the last injection. Some of these spots were raised above the surface, but the surrounding skin was not hyperaemic. They mostly appeared over the back of the tongue, palms and around the umbilicus. We had an opportunity of observing the patient a few days back, five months after the rashes first appeared. They have undergone a change in colour being more blackish than before, but showed no signs of fading away.

(6) Glycosuria—was present in 12 out of 42 or 28. 5 per cent of our cases before the treatment was started. Only a trace of sugar was present. In three cases it occasionally disappeared, but in the remaining nine it persisted throughout, the course not being in the least affected by solganal-B.

RESULTS OF TREATMENT

It is very difficult to assess the value of any special treatment when good food, fresh air, rest and graduated exercises and other factors constituting sanatorium regimen—all play their part. This difficulty is still more enhanced when, as in the present case, the specific drug treatment is combined with other methods like artificial pneumothorax. We have, therefore classified our cases according to the line of treatment adopted and the results obtained on them are shown in a tabular from in the subjoined table.

No.	GROUPS	No. of cases	Effect on Physical signs			Sputum			T.B. in Sputum				Fever				Weight			REMARKS
			Arrested	Considerably improved	No effect	cough and sputum completely checked	Markedly diminished	No Improvement	Negative before treatment	Rendered negative	Number reduced	No Improvement	Afebrile before treatment	Rendered afebrile	Markedly reduced	No Improvement	Gained	Lost	No change	
I	More o r less unilatral cases of all types with only slight signs of active disease in the healthier lung where solganal-B was combined with artificial pneumothorax	17	5	10	2	7	8	2	5	6	5	1	1	7	7	2	16	-	1	
II	Chronic fibrocaseous or fibrocavernous cases, mostly bilateral or unilateral where A. P. had failed	7	1	1	5	1	4	2	-	2	3	2	2	1	-	4	5	2	-	In 2 of these cases A. P. was attempted but failed due to adhesions.
III	Cases with recurrent haemoptysis	6	-	-	6	-	1	5	-	-	3	3	-	-	1	5	3	2	1	
IV	Advanced bilateral cases with profound systemic disturbance	6	-	-	6	-	-	6	-	-	-	6	-	-	-	6	-	6	-	
V	Early Infiltration	4	2	1	1	3	1	-	-	4	-	-	2	2	-	-	4	-	-	Improvement was most marked in 2 patients where the disease followed immediatelyan attack of typhoid fever.
VI	Cases where tuberculin had failed to check the disease	2	-	-	2	-	-	2	1	-	-	1	1	-	1	-	-	-	2	The patients left the hospital soon after the treatment was started
	TOTAL	42	8	12	22	11	14	17	6	12	11	13	6	10	9	17	28	10	4	

From a scrutiny of this table it will be observed that our Group I consisted of 17 patients or 40.5% of the cases. They were all treated with A. P. and with solganal-B to check activation or progress of the disease in the opposite lung and the results obtained in them were not satisfactory. In 29.4 % of them the disease was arrested and in another 58. 8% it considerably improved making a total of 88.2, the percentage of positive results, As against this we find that the percentage of positive results for all cases treated with solganal-B alone is only 20.

In Group II consisting of bilateral fibrocaseous cases, positive results were obtained in 28. 5% cases while in the same percentage of cases, the sputum was rendered negative. These results while not very hopeful are neither too bad, because our known methods of treatment for these are far from satisfactory.

Group III consists of cases with recurrent hæmoptysis. We selected six such cases for solganal-B treatment because nothing but A. P. could check the progress of the disease in these cases. Our results, unfortunately, have been extremely disappointing. Some of these cases grew worse and began bringing up blood at shorter intervals.

As might be expected, results for Group IV consisting of very advanced cases with systemic disturbances were extremely bad. We took to this treatment on them only as a last resort.

Group V—Cases with early infiltration also yielded very good results. But as these cases mostly recover by institutional regimen, it is difficult to estimate what part of the benefit should be attributed to gold treatment.

Solganal-B was tried on 2 cases (Group VI), where tuberculin had failed to check the disease. One of these patients improved in general health with tuberculin but the lungs did not clear up in skiagram. Both these patients left the hospital soon after the treatment was started and nothing definite can be said about these cases.

Let us now consider the effect of solganal-B on various signs and symptoms. The results are given in a tabular form. To make better judgment, results for cases treated with solganal-B alone and those combined with A.P. are shown separately.

TABLE I

EFFECT ON PHYSICAL SIGNS

Groups.	No. of cases.	Totally arrested.	Considerably improved.	No improvement.
Solg. B alone	25	3 (12%)	2 (8%)	20 (80%)
Solg. "B" combined with A.P.	17	5 (29.4%)	10 (58.8%)	2 (11.8%)
Total	42	8 (19%)	12 (28.5%)	22 (52.5%)

TABLE II

EFFECT ON SPUTUM.

Groups.	No. of cases.	Frequency and quantity completely checked.	Markedly reduced.	No change
Solg. B alone.	25	4 (16%)	6 (24%)	15 (60%)
Solg. B with A.P.	17	7 (41.2%)	8 (47%)	2 (11.8%)
Total	42	11 (26.7%)	14 (33.3%)	17 (40%)

TABLE III

EFFECT ON TUBERCLE BACILLI IN SPUTUM.

Groups.	No. of cases	Negative before treatment was started.	Rendered negative	No. considerably reduced	No improvement
Solg. B alone.	25	1 (4%)	6 (24%)	6 (24%)	12 (48%)
Solg. B with A.P.	17	5 (29.4%)	6 (35.3%)	5 (29.4%)	1 (5.9%)
Total	42	6 (14.3%)	12 (28.5%)	11 (26.7%)	13(30.5%)

TABLE IV

EFFECT ON FEVER.

Groups.	No. of cases.	Afebrile before treatment.	Rendered afebrile.	Markedly reduced.	No improvement.
Solg. B alone.	25	5(20%)	3(12%)	2(8%)	15(60%)
Solg. B with A.P.	17	1(11.7%)	7(41.2%)	7(41.2%)	2(5.9%)
Total	42	6(14.3%)	10(24.2%)	9(21.5%)	17(40%)

TABLE V

EFEECT ON BODY WEIGHT.

Groups.	No. of cases.	Gained.	Lost.	No change.
Solg. B alone	25	12(48%)	10(40%)	3(12%)
Solg. B with A.P.	17	16(94.1%)	Nil.	1(5.9%)
Total	42	28(66.6%)	10(24%)	4(9.4%)

TABLE VI

EFFECT ON SEDIMENTATION VELOCITY OF R.B.C.

Groups.	No. of cases compared.	Rate diminished (improved)	Rate increased. (worse)	No change.
Solg. B alone.	3	1(33%)	2(66%)	Nil.
Solg. B with A.P.	7	5(71.4%)	Nil.	2(28.6%)
Total	10	6(60%)	2(20%)	2(20%)

It will be seen that a comparison of sedimentation rates of R.B.C. was made only in 10 cases and here also cases combined with A.P. showed better results. We, however, hesitate to draw any definite conclusion from this small number of cases.

CONCLUSION.

It will be too premature to form any conclusion from the small amount of clinical materials at our disposal. Further works must be done to establish its efficacy. Careful observers will, however, be able to draw their own inferences from a perusal of the tables given above. We shall rest content by drawing their attention to some of the salient features :

(1) Like sanocrysin it is a valuable adjunct to A.P.

(2) It is worth a trial in early infiltrative and chronic fibrocaseous cases specially when other treatments have failed.

(3) It is of no value in very advanced cases and cases with recurrent haemoptysis.*

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Anaemia of Pregnancy

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Introduction

Anaemia of pregnancy is not an infrequent disease in Bengal, and it has a tendency towards steady progress, although it is surprisingly a rare disease in Europe. The earliest recorded case is that of Lelrat of Switzerland in 1854, who called it "Puerperal chlorosis". Biermer gave a clinical picture of anaemia of pregnancy in 1872, and Ehrlich diagnosed the condition as pernicious anaemia after a thorough blood examination. Esch (1921) of Marburg University collected 23 cases in 1917 from German literature of the previous 21 years. The cases are as follows :

Labend Zinski (1912) of Munich University	2	Cases
Jungmann (1914) of Strassburg	2	"
Morawitz (1907) and Wolff (1914) of Heidelberg	2	"
Sachs (1909) and Wagner (1902) Berlin University	2	"
Wagner (1902) and Thies (1901) Leipzig	2	"
Weber (1909) of Giessen University	1	Case
Hirnheimer (1913) of Erlangen	1	"
Drygas (1902) of Posen ...	1	"
Baureisen of Kiel University and	1	"
Esch of Marburg	9	Cases

During the last 6 years (1926—1932), we have got 238 cases in the Seva-Sadan women's Hospital, the total number of cases being 6,767.

Development of Anaemia

Anaemia is a condition produced by anhaemopoiesis or erythrolysis, is either diminished blood formation or increased blood destruction. Boycott uses the term erythron to denote red blood cells, and cells from which they arise. "The capillaries of the marrow not only serve to maintain the circulation, but they also have a dual function in erythrolysis and erythrogenesis." Red cells are formed intravascularly from the inter-sinusoidal capillaries. The endothelial cells lining the inter-sinusoidal capillaries give rise to earliest megaloblasts and produce erythroblasts, normoblasts, reticulocytes, and the red cells of the circulating blood.

In the normal non-hyperplastic, unstimulated state, the erythroblastic level is the one from which the vast majority of the red cells come. Erythroblasts proliferate rapidly. One megaloblast is conceivably sufficient to form the basis of an extensive focus of erythroblasts which may be able to multiply quite indefinitely under normal conditions. Normal marrow has a considerable store of normoblasts which pass into next phase of erythrocytes. But under the strain of a continued abnormal demand, the endothelium does actively proliferate and does give off free cells of the haemoglobin-bearing series.

Maximow propounds the ***Trialistic theory*** of hæmopoiesis i. e., erythrogensis ;

A Myeloid origin (from bone marrow)

B Endothelial origin—through proliferation and isolation of the common endothelium of blood vessel and,

C Histiocytic origin—from fixed histiocytes in various places of the body.

According to Maximow, the appropriate name for reticulo-endothelium should be histiocytes. The histiocytes may in various places present distinct differences in their structure, which is strongly influenced by the functional condition of cells, and may be divided into (a) resting, fixed or non-mobile and (b) active or amoeboid. All histiocytes have the potency of wandering

under certain stimuli. Histiocytes of spleen and liver *phagocytose worn-out or damaged erythrocytes* and as a result of this erythrophagocytosis iron-containing pigment may accumulate in their protoplasm. Histiocytes also play an important role in the general metabolism, and in general and local 'defence' reactions.

As we have already mentioned, anaemia is caused either by erythrolysis or anhaemopoiesis. Erythrolysis may be the result of toxins from various diseases, and organic or inorganic poisons. Anhaemopoiesis has been beautifully explained and illustrated by WITTS in his Goulstonian lecture.

According to WITTS, each and all anaemias can be explained by the starvation of the organism in the materials necessary for blood formation. Some of these materials are Fe, Cu, thyroxin, vitamin B, vitamin C, and active principles of liver. The starvation may be result of imperfect diet or of impaired digestion or assimilation. Anaemia is due to diminished blood formation, and it may be macrocytic, microcytic or aplastic in type according to the stage at which erythropoiesis is arrested.

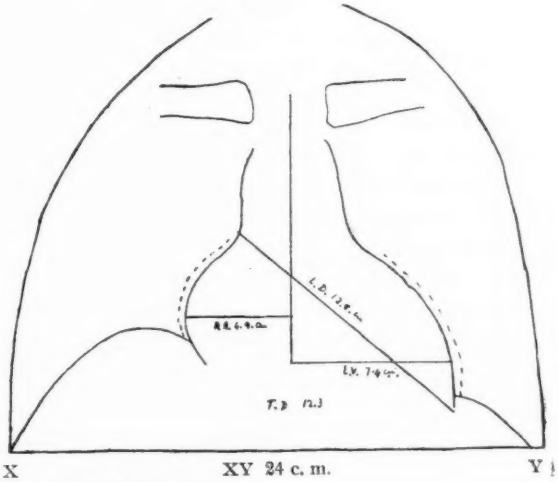
CLINICAL MANIFESTATIONS

Pregnancy anaemia is a complex anaemia which is neither an Addisonian anaemia nor an aplastic anaemia but a peculiar separate entity characterised by its association with pregnancy and disappearance with the latter. It is insidious in onest, and appears in all classes of people of all communities. Generally the patients are multiparous (about 76 to 82%) and occurs most commonly in the second half of the year. Out of 56 of our cases in 1932, 51 were found between August and January, and only 5 between February and July. This seasonal variation is also found in other obstetric complications and more particularly in eclampsia which is prevalent during the latter half of the year.

The clinical aspect of the disease is briefly stated as follows. It usually commences about the middle of pregnancy, is fairly acute and progresses rapidly. It is accompanied by irregular fever, a rapid pulse, dilatation of heart, profound weakness, breathlessness, sore mouth, oedema of feet and puffiness of face. There is practically no emaciation but on the contrary a superabundance of subcutaneous fat with a pale yellowish tint. Gastro-intestinal disturbances were found in about 44% of our casses. There is no hypochlorhydria or achylia-gastrica in anaemia of pregnancy (WILLS and MEHTA).

Cardio-vascular system is greatly damaged in pregnancy anaemia. Breathlessness and palpitation are present in almost all cases, and pulsation is visible in neck, precordium and sometimes in epigastrium. In most of the cases, heart is dilated. The first sound is soft and short, and the interval between the first and second sound is short, and a haemic murmur is present. We have done a series of ortho-cardiograms. Normally the ratio between the dimension of the right heart to that of the left is 1 : 2·4 Both the ortho-cardiograms in Figs 1 & 2 show that its ratio is altered, in

FIG. 1



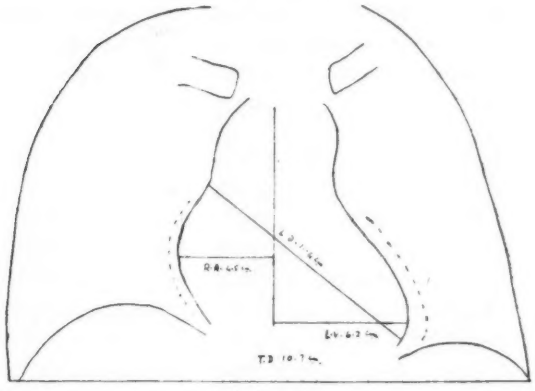
X XY 24 c. m. Y

Mrs. LAKSHMI DASI
Age 18 years

	Average Ratio	Ratio in this case
XY—24 c.m.		
TD—12·3 c.m.	TD : XY :: 1 : 1·9	1 : 1·09
LV— 7·4 c.m.	RA : LV :: 1 : 2·4	1 : 1·6
RA— 4·9 c.m.	TD : LD :: 1 : 1·1	1 : 1
LD—12·8 c.m.		

one it is 1 : 1·6 and in the other it is 1 : 1·5 thus pointing to the dilatation of right heart. Nor-

FIG. 2



X XY 24 c. m. Y

Mrs. NAGENDRA BALA

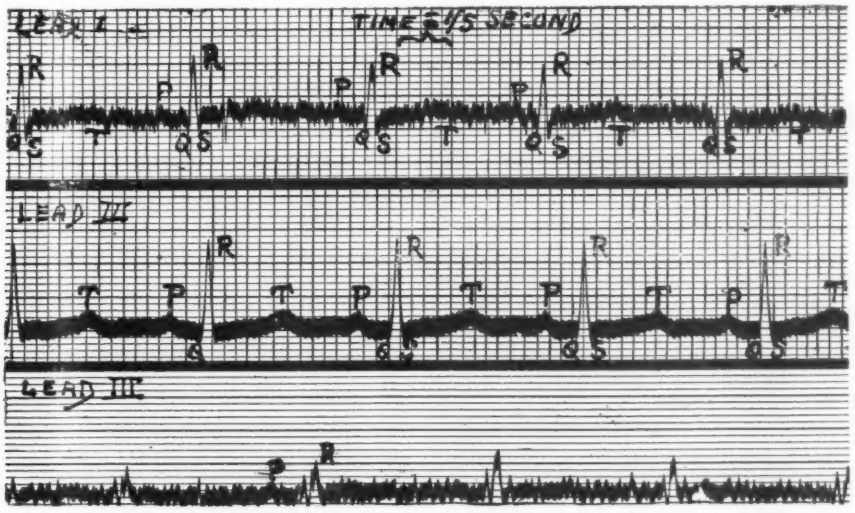
	Average Ratio	Ratio in this case
XY—24 c.m.		
TD—10·7 c.m.	TD : XY :: 1 : 1·9	1 : 1·09
LV— 6·2 c.m.	RA : LV :: 1 : 2·4	1 : 1·5
LD—11·4 c.m.	TD : LD :: 1 : 1·1	1 : 1

mally the longitudinal dimension is equal to the transverse dimension or basal breadth. In these cases basal breadth is distinctly greater than the longitudinal dimension.

On Screen Examination in the erect position, the heart shows quite a normal form in inspiration resting on diaphragm, but in expiration it appears like "formless mass, as if in the form of a badly filled purse". This sign of expiratory flattening is a sign of relaxed atonic heart. Its longitudinal axis has moved from its more vertical position into an almost horizontal one, the cardiophrenic angle is therefore smaller in expiration and has moved more to the right. The form of heart is completely altered, it appears so to speak broken up, broadens out to the right and to the left and in very bad cases it takes up the form of the cupola of the diaphragm.

We have also tried to make electro-cardiographic study of a few typical cases of anaemia of pregnancy. Fig. 3 shows from 'P' to 'Q' the "auricular complex", from 'Q'—'R'—S' to 'T', ending at 'T', the "ventricular" complex and from 'T' to next 'P' the diastole. The graph indicates that myocardium is weak, flabby and atonic, because of the absent 'T' in leads I and III and small 'T' in lead II.

FIG. 3



Electro-cardiographic Examination of Sm. R. R. (Sevasadan)

Hæmatological Examination forms a very important part in the clinical investigation

of anaemia of pregnancy cases, but it has been extensively done both by special and general workers on haematology. Color-index is hyperchromic, although there is marked diminution both in Hb—content and red cell count. In our last series we showed red cell count below one million in 40% of cases. Leucopenia was rare and red cells in different stages of formation and destruction were present. Up till now we do not thoroughly agree with WITTS and WILLS to call pregnancy anaemia a typical macrocytic anaemia. We fixed it to be a mixed variety macrocytes predominating in one and microcytes getting the upper hand in other. Reticulocytes are present and their progressive increase in percentage forms an important index of controlling the progress of recovery. Blood chemistry has been done in some of our cases and data given in the following table.

TABLE 1

Biochemical Examination
of Anaemia of Pregnancy Cases.
(Expressed in mg. per 100 c.c.)

Cases	Blood Calcium	Urea Nitrogen	Phosphates	Cholesterine content
Narmal	9-11	12-15	3-4·5	140-200
1.		7		80
2.		10·5		110
3.	9·4	7	6	125
4.	9·8	12	6	131
5.	9·5	7	2·3	240
6.		17·5		260
7.	10·1	24·5	2·8	135
8.	9·4	7	3·1	175
9.	9·2	7	3·3	105

The table does not enlighten us much to bring about any conclusion.

We started with the assertion that pregnancy anaemia is neither aplastic nor pernicious in type, and naturally an explanation is due. It is not aplastic because (a) there is no leucopenia (b) color-index is above unity and (c) the most important distinctive feature is the presence of regenerative activities both in bone marrow and in blood. It is not pernicious, because there is (a) absence of marked remissions and exacerbations (b) shorter duration (c) association with pregnancy and termination with it (d) no hypochlorhydria or achylia gastrica (e) no leucopenia and (f) spinal cord lesion.

ETIOLOGICAL INVESTIGATION

I have dealt elaborately in my previous paper the etiology of anaemia of pregnancy, but the problem has not yet been definitely solved. Almost all the workers on this subject agree that pregnancy anaemia is not a secondary anaemia as a result of malaria, kala-azar, dysentery, hookworms or syphilitic affections, and our clinical investigation has convinced us that coincidental association might only aggravate the condition of grave anaemia.

Several theories have been put forward to prove it to be "a disease of theories", but I shall discuss only two theories which have occupied the attention of present day workers.

VITAMIN DEFICIENCY THEORY

WILLS' researches point towards the deficiency of vitamin B in pregnancy anaemia. This vitamine B or B_2 present in yeast is CASTLES' "extrinsic factor", which being absent the intrinsic factor can not work on the protein of the diet, and then the active haematinic principle cannot be formed—a fact which ultimately leads to macroytic anhaemopoetic anaemia. WILLS claims to have cured many desperate anaemia cases with marmite containing vit. B. Our results are not so encouraging.

TOXAEMIC THEORY

The toxæmic theory of anaemia of pregnancy is steadily gaining ground. The pathogenesis of anaemia depends upon a hæmolytic toxic agent. This toxin or a syncytial hæmolysis (HOFBAUER) is found in the ectodermal cells of the chorion. It is the want of the production of antihæmolysin that produces anæmia. Thus it appears that pregnancy anæmia is a toxic hæmolytic anæmia, the toxin having its origin at the site of placenta. That it is hæmolytic,

is evidenced by the destruction of red blood cells and deposition of hæmosiderin granules in liver, spleen, kidney and other organs. The toxæmia of pregnancy has various manifestations affecting different organs in different conditions., e.g. eclampsia, hyperemesis gravidarum, acute yellow atrophy, antepartum hæmorrhage etc. In anæmia of pregnancy, the toxin has got a special predilection for the hæmopœtic system. Characteristic changes similar to those found in hyperemesis gravidarum or acute yellow atrophy were shown in my former paper by the histological examination of liver. Histological examination shows full degeneration of the central part of the lobule accompanied by extravasation of blood, while the peripheral part looks quite healthy. This characteristic fatty degeneration of cells only round the central lobular veins and the hæmorrhage beyond it, a fact hitherto unnoticed, points definitely to the toxæmic origin of the anæmia of pregnancy. Subsequently GUPTA'S work on histopathology of anæmia of pregnancy shows similar degenerative process.

MANAGEMENT

We must frankly confess that up till now we have not been able to make any definite advancement to effect a cure of anæmia of pregnancy. The comparative table below shows year by year the results of anæmia cases in our hospital.

TABLE 2

Year	No of Cases	Hb. Content. Up to		Mortality. Mother.		Child.	
		10%	20%				
1926-1929	86	3	23	37	43		52·8
1930	48	Nil	6	16	33·3	28	58·3
1931	48	6	27	23	47·9	35	72
1932	56	13	38	21	37·5	31	55

Although the percentage of mortality is least in 1930, the result is very satisfactory in 1932, considering the gravity of cases which were met with this year. In 1930 there was no case with the hæmogolobin percentage about 10% ; in 1932, there were 13 cases (including 4 moribund cases) where the Hb content was 10%. In 1930 there were only 6 cases where the Hb value was below 20%, in 1932 there were 32 cases with Hb value below 20%, and the mortality in 1932 is only 37·9% as compared with 33·3% of 1930. I have given here only the Hb value in order to show the gravity of cases, although other findings were equally apparent. Critically analysing our cases, we can account for this improved results of 1932 by our well systematised method of treatment which we have follwed last year and which I shall dilate on shortly.

Now leaving behind the critical discussion of results, let us take up the therapeutic agents, which are utilised for the management of anæmia of pregnancy. These are chiefly blood, liver extract, glucose, iron, vitamin B and a host of other medicines.

Blood has been extensively used in anæmia of pregnancy, and with apparently good success. It is given either in the form of massive transfusion, or transfusion of small quantities at frequent intervals or intramuscular injection of whole blood. Blood is generally taken from the relatives but in some cases we have tried normal pregnant women's blood for experimentation. At present we do not advocate massive blood transfusion. Intravenous injections of 15 to 20 c. c. of blood twice or thrice weekly have been tried with very good results ; generally intramuscular injections of whole blood (15 to 20 c. c.) are given sometimes daily, at other times alternating with 20 c. c. of 25% glucose solution. I would cite one case to illustrate the above statement. Patient M. aged 35 years, 11-para, was admitted in our hospital with the history of amenorrhœa, 7 months, generalised œdema of the whole body, diarrhœa and slight fever. Both liver and spleen were enlarged. There was ascites present and albumen was found in urine. B. P. was $\frac{120\text{ (systolic)}}{60\text{ (diastolic)}}$ m. m. Hg and heart was dilated. On admission blood was examined. Hb content was 14% (SAHLI) R. B. C. less than one million (0·88 million), nucleated red cells, anisocytsosis, poikilocytes and myelocytes present. This case

was treated with whole blood injections, blood transfusion of small quantites from a normal healthy pregnant woman as well as with intravenous glucose injections. There was a steady rise of the Hb content, the patient recovered from the shock of confinement and the patient was discharged in a convalescent state with about 40% of Hb content.

Now comes the question, how does the blood act? Certainly the quantity of blood transfused or injected cannot replace the deficient quantity in an anæmia of pregnancy case, neither is it possible physiologically. Blood stimulates the erythropœtic system and helps in erythrogenesis. As anæmia of pregnancy is a condition characterised by devitalisation and atonic condition of tissues by the toxin of pregnancy, the process cannot be reverted by a few massive blood transfusions. It would certainly give a stimulus but it might produce too severe a reaction for the debilitated system which will have to arrange a laborious metabolic process to dispose of the enormous quantity of foreign material, and the stimulus might be too transient to effect sustained energy to the haemopoetic apparatus. Massive blood transfusion is indeed very good for recent loss of blood but perhaps better results would be forthcoming from transfusions of smaller quantities. There will be less taxation to the metabolic process, and perhaps more stimulation to erythrogenesis. We have started this method since last 2 years, but still we keep an open mind.

Liver Therapy

Since the introduction of liver therapy by Minot and Murphy, an extensive trial has been given to this form of treatment in all forms of anaemia. Our general impression is favourable so far as pregnancy anaemia is concerned. Liver contains anti-anaemic factor which helps in the maturation of megaloblasts. This anti-anaemic factor has not yet been isolated, although it is claimed by Whipple to have found out such a material. Howe and Dakin isolated an active crystalline substance of the nature of dipeptide of B-hydroxyglutamic acid hydroxyproline.

Liver is administered either as raw liver pulp or as an extract orally, intramuscularly or intravenously. Single massive dose of liver extract introduced into stomach by tube has been tried but not found suitable. Oral administration is quite convenient and economic provided there is no gastro-intestinal disturbance present. Unless the adequate dose be given (about ½ lb. of fresh liver or its equivalent) no appreciable result can be expected. Intravenous method has been claimed to be the most potent method, where the action is said to be increased three thousand fold as compared with the liver given orally. Genssl.ein and Schilling as well as French workers Hamberger and Aubertin have got satisfactory results by daily intramuscular injection of liver extract. We have also got very satisfactory results by daily intramuscular injections of hepatrat (a patent liver extract), kindly supplied to us by Messrs. Albert David & Co. I would illustrate my statement by citing one of our cases, where the treatment was carried out only with hepatrat. Patient P, 2—para, 19 years old, was admitted on 7. 3. 33 with anaemia, generalised oedema and full term pregnancy.

Blood examination on 9.2.33 revealed Hb—25%, R.B.C. 1·17 million, W.B.C. 9,370, nucleated red cells and other abnormal cells present. After 15 injections of hepatrat, blood examination showed Hb 30%, R.B.C. 1·6 million, W.B.C. 8,750 and abnormal cells. Patient had safe delivery and was discharged after 27 injections of hepatrat, Hb value being raised to 40%, R.B.C.—2·03 and W.B.C.—10,000

Vitamin Therapy

Wills found that marmite a kind of yeast product containing vit. B, produced excellent results in macrocytic anaemia in women, whereas preparations containing vit A & C failed to produce any improvement. We have extensively pushed marmite in 1931, but our results are not so encouraging. We intend to give a further and more elaborate trial this year.

Iron is the time old thing for the treatment of anaemia and no case has escaped its admini-

stration in some form or other. According to WITTS, the classification of its preparations in order of efficiency are (1) ferrous salts (2) scale-preparations (3) metallic iron (4) ferric salts (5) organic iron. The favourite preparations are Blaud's pills and ferri et ammon citras ; the minimal effective dose is at least twice the pharmacopœial dose, i. e., Blauds' pills 30 gr & Ferri et ammon cit. 60 gr.

GLUCOSE THERAPY

Glucose is a very effective therapeutic agent in anaemia of pregnancy. It is generally given intravenously. Recently we have been giving it subcutaneously with normal saline. The latter method is very helpful in those cases complicated with diarrhoea, and where it is difficult to give glucose by intravenous method. We generally administer 5% glucose solution in normal saline about half to one pint in each thigh. When given intravenously, about 10 c.c. of 25% solution is given every alternate day or every 3rd day. As the myocardium is damaged in almost every case of anaemia of pregnancy, glucose either alone or in combination with strophanthin is an invaluable agent to bring back the tone of the cardiac musculature. It also forms the main part of the diet particularly in debilitated patients suffering from diarrhoea with anaemia. Lastly, though not least in importance, glucose acts as a detoxicating agent neutralising the toxin which seems to be the causative factor in anaemia of pregnancy. We strongly advocate glucose therapy in anaemia of pregnancy and our statement is substantiated by the improved result which we have obtained last year by the systematic administration of glucose in almost every case.

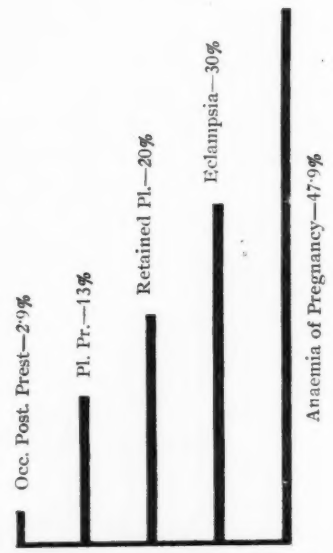
To summarise the management of anaemia of pregnancy, our experience leads us to believe that there is no specific treatment for anaemia of pregnancy. The treatment is mainly symptomatic and eliminative as in other toxaemias of pregnancy. Cure is never vouchsafed unless pregnancy terminates. Better results can certainly be obtained by following a systematised, adequate and well-organised course of treatment, than by following an irregular 'drib-drab' method. I would like to present the technique of treatment which we have tried to follow during last year, and which appears to have yielded better results than those of previous years. It goes as follows :

1. Systematic method of taking the history of the patient and recording the progress of treatment in the follow-up table.
2. Systematic clinical examination of blood, urine, stool etc.
3. Plenty of sun, light and air.
4. Diet—a well-balanced plentiful diet, rich in the factors known to be of value in the manufacture of haemoglobin is all that is required. Plenty of green vegetable should be taken.
5. Intravenous glucose injection (10 c.c. of 25% solution) on every alternate days.
6. Whole blood injection, 15 to 20 c.c. or blood transfusion in small quantities (15 to 20 c.c.) on alternate days.
7. If the condition of myocardium is bad, strophanthin 1/150 is given with glucose injection and digitalin and adrenalin given by mouth.
8. Liver therapy—full and extensive course as stated above.
9. Iron, Hcl and other drugs as necessity demands. In microcytic type, iron is pushed to a much greater extent than liver extract.
10. Specific treatment is given if W.R. is found positive, and anti-malarial and anti-kala-azar treatment given if corresponding parasites are found.
11. Fractional doses of deep x'ray treatment have been tried to stimulate the reticulo-endothelial apparatus with apparently good success. The detailed report was published in my former paper.
12. The question of the termination of pregnancy was also discussed elaborately in my former paper. We do not advocate artificial termination of pregnancy ; spontaneous termination (which occurs very commonly) is better than artificial.

Although we have said much about the treatment of anæmia of pregnancy, still the last word has not yet been said. There are cases which are absolutely refractory to any form of treatment and succumb proving the futility of our treatment and cases have also been observed not without surprise that have come back from the threshhold of death without much medical help.

CONCLUSIONS: I have tried my best to study cases of anæmia of pregnancy from various aspects keeping an open mind. The subject is very complicated and most important so far as the lives of our mothers and sisters are concerned. The adjoining diagram (Fig 6)

FIG. 4



Percentage of Mortality in 1931 in some obstetric complications in Chittaranjan Seva Sadan, Calcutta.

will show that in midwifery, heaviest toll is taken by anæmia of pregnancy.

During the last 6 years, we lost about 100 mothers from all sections and communities in spite of the most strenuous efforts. We shall have to find out the root cause, and means to fight it out, we shall have to detect the cases early at the very inception, and we shall have to prevent its occurrence, as prevention is the best cure, and as we know that once the disease is well established, we can do very little to eradicate it. Vigorous ante-natal propaganda and the education of the public will help in preventing the disease immensely. Being insidous in nature, the onset of this pregnancy anæmia is not given much attention, but the careful clinical eye, and the knowledge of its frequent occurrence will immediately detect cases.

And we shall have to find out ætiology, progress, pathological anatomy, and the management of these cases here as the disease is practically unknown in Europe.

I have the greatest pleasure in acknowledging the kind help which I received from the authorities and colleagues of the Seva-Sadan and also from my esteemed friends Drs. Sunil C. Bose, H.N. Mukherjee, and J. N. Dutt.

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Dionin in Ophthalmic Practice

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Dionin, as we all know, is ethyl-morphine hydrochloride (C_2H_5O. (OH). $C_{17}H_{17}NO$. H CI $+ H_2O$) is a white crystalline powder of a slightly bitter taste and soluble in 12 parts of water, the solution having a netural reaction. As regards its pharmacodynamic properties it most closely approaches codeine (methyl-morphine), but its action is more pronounced because instead of the methyl group it contains ethyl group, which latter as a rule endows a compound with more powerful properties. Dionin possesses the analgesic and narcotic properties of morphine, but without its intensity. Experiments as well as clinical experience have proved it to be of comparatively low toxicity. It has none of the deleterious effects attending the use of morphine and its other derivatives, it does not produce euphorism, nor does it lead to a habit. It has got a special action on diseases of respiratory tract such as asthma, bronchitis, pleurisy, pneumonia, laryngitis, hay fever etc. and also, in painful alimentary disturbances as well as sciatica and neuralgia. But I will keep myself confined to the usefulness of this drug in diseases of eye only in this paper.

Action of Dionin on the Eye

The application of dionin powder of 5% solution to the eye is followed by burning and injection of the eye after which in a few minutes a marked hot œdema of the conjunctiva developes which may go on to a tense chemosis with puffing of the lids but this phenomenon is very rare and in fact none of my cases-more than 200 —in which I have put either solid dionin and 4.5% dionin solution developed this unpleasant symptom. There happens a copious flow of tears too. This œdema disappears in a few hours. The great hyperæmia and lymphagogue action of the dionin causes the natural protective substances of the blood to pass into the tissue of the conjunctiva and into the interior of the eye and clears away all the toxins and the deleterious materials of the eye. It relieves the stagnation of the lymphatic and vascular supply of the eye by bringing in fresh blood and lymph and when the reaction subsides the backward flow of the blood and lymph takes away with it all the waste and deleterious materials together with dead bacteria and toxins.

The fresh lymph brings in antibodies to the diseased spot which neutralises the toxins and the fresh blood brings in W. B. C. which by phagocytosis eats away the bacteria and the waste products.

Owing to its absorbent power, its cleansing effect and the way it promotes healing, this "lymphatic flooding" has proved to be of highest therapeutic value in eye diseases. This is especially apparent in corneal affections such as scrofular or phlyctenular parenchymatous and traumatic keratitis etc.

The anodyne action of dionin is apparent in the treatment of corneal ulcers. Its action is more profound than that of cocaine and instead of retarding regeneration of the epitheliun as the latter drug is known to do, it favourably influences its formation, a conclusion which also applies to its effect in herpes of cornea and in dendriform keratitis, while its analgesic properties render excellent service in iritis, irido-cyclitis and glaucoma. Dionin promotes the absorption of hæmorrhagic and serous exudates; this absorption is coupled with a cleansing action which soon becomes evident in corneal opacities of vitreous body, the clearness of vision also improving.

The copious flow of tears caused by the application of dionin brings about a mechanical

cleansing of the eye thus forming a natural protection against infection.

Dionin also increases action of mydriatics. In cases where atropine alone has proved powerless to produce mydriasis, it will generally set in, if dionin is instilled into the eye a few minutes afterwards. By this method it is possible to break down or at any rate sufficiently stretch long-standing and broad posterior synechiæ which have previously resisted all other form of treatment.

Dosages and Methods of Administration

Dionin is used in 3 ways in ophthalmic practice.

1. In aqueous solution as drops to the eye.
2. As solid insufflation.
3. As subconjuctival injection.

Now I will describe and discuss the first two methods:

Dionin in aqueous Solution as drops to the eye

The strength of dionin solution to be used as drops varies from 2% to 10% according to different authorities. But during my two years of experimentation with various strengths of dionin solution in my hospital and private practice I have come to the conclusion that 4.5% or gr. 20 to an ounce is the optimum strength as it gives the desired result within the shortest time and without the least uncomfortable irritation to the eyes of even the most fastidious patients. Lesser strengths-such as 2% solution which is commonly used in hospitals are practically useless, for the action is very feeble and it takes a very much longer time to get the desired result, if ever achieved, which is very doubtful; moreover the patient gets disgusted with the treatment no less with the doctor. I have used dionin solution gr. 20 to an ounce to the eye. Higher strength have caused lot of irritation to the eyes and the patients were rendered extremely uncomfortable for hours afterwards and the results were practically the same as those with 4.5% solution.

This solution was dropped in the eyes every 4th day so that when the action of the previous instillation ceases we put the next one to cause fresh reaction. Daily drops of dionin or dionin repeated at lesser interval is useless for the drug loses its action on the eye when instilled too frequently and it is sheer wastage of drug and time to do so.

Dionin as Solid Insufflation

Dionin in powder form is sprinkled on the lower conjunctival fornix by depressing the lower lid and not on the cornea directly by means of a dry brush or by a spatula or even a cyst spoon. Only few particles of it should be dropped approximating 1½ of a grain. This is the most efficacious method of getting the full action of dionin on the eye. I have tried it extensively in my hospital cases and had excellent results. There was not the least amount of danger of developing untoward symtoms described in text books and neither it was found uncomfortable to any of my patients. I have tried it in rich and poor and none suffered from the so-called chemosis of conjunctiva and puffing of lids and other disturbances. The only sensation that most of them complained was that of itching. In all cases in which I used solid dionin I put two instillations of dionin solution gr. 20 to oz. 1 at an interval of 4 days previously to have the eye sufficiently desensitised for the vigorous action of dionin in solid state.

The interval of 4 days were kept up all throughout solid dionin insufflations which were never more than 4 or 5 to get successful results. So none need be afraid to use it in suitable cases and I hope all who are doing ophthalmic practice will give this method a proper trial. I have found it to be the best remedy available to the ophthalmic surgeon to rectify most of the accidents and sometimes errors of judgement on the part of the operators that commonly occur during extracapsular cataract operation as mentioned below:

(a) Leaving of little soft cortical matter in the anterior chamber after extracapsular cataract operation either due to careless washing or due to extreme nervousness of the patient, who did not allow proper irrigation by squee-

zing the eye or in which vitreous presented itself at the section and the eye had to be shut promptly and bandaged without proper irrigation having been done and that soft matter is presenting at the pupillary area.

In such cases I have tried both dionin solution and solid dionin for the absorption of this cortical matter with great success and in all the 20 cases that I observed in Balrampur Hospital, Lucknow during these two years, the soft matter entirely disappeared. The procedure was to drop dionin solution gr. 20 to oz. 1 twice and then followed by 2 or 3 instillation of solid dionin and this was sufficient to clear the anterior chamber completely with full restoration of vision. Generally it took 10 to 15 days to clear the eye. In obstinate cases in which the matter left was too much, it took 3 to 4 weeks. The dionin treatment should be tried as early as possible. On the 3rd day when the bandage is opened I start the dionin instillation in such cases and I have found, the more one delays the onset of the treatment the more time it takes to absorb and less efficient is the end result. Generally what people do is to instill atropine sulph gr. 5 to oz. 1 t. d. s. for 10 to 15 days in the hope of its being absorbed and then resort to dionin when it is too late and when cortical matter has organised itself.

I think this type of accident is very common with those who practise extracapsular operations and patient leaving the hospital with very diminished vision or no vision after catract operation brings a slur on the ophthamic surgeon and the hospital which can be easily avoided by prompt and early use of dionin in proper strength.

(b) Hæmorrhage in anterior chamber either from the conjunctival flap when made by surgeon or from lacerated iris which happens when the iris falls on the edge of the knife while cutting section or from any other accidental cause.

Here also dionin treatment is marvellous. In the 5 cases that I observed in Balrampur Hospital, Lucknow, in 4, the blood was completely absorbed leaving none of its signs and the vision was perfect, in the fifth case a few strands of fibrin remained even after 2 instillation of solid dionin which interfered with the proper vision although the rest of the anterior chamber was completely clear. I could not carry on further treatment as the patient left the hospital.

Here I remember a curious accident that occurred 2 years ago in a case of Dr. Misra, ophthalmic surgeon in Lucknow which was operated for cataract in a dharamshala. On the day following operation a bat accidently flew on the bandaged eye of the patient and in the next morning when it was opened by Dr. Misra the whole of anterior chamber was found to be full of blood. I had then just started my experiments with solid dionin and Dr. Misra asked me to try it on this patient. I put solid dionin in the eye and to my extreme joy and surprise with three instillations the whole of anterior chamber cleared up of blood and patient was discharged with full vision.

(c) Defective and delayed healing of the section due to keratitis being set in as a result of the section being corneal and ragged either due to a bad knife or error of judgement on the part of the surgeon or a very nervous patient squeezing the eyeball while the section is being done or slow sepsis setting in from local causes or due to some systemic diseases such as diabetes etc.

Here we find the edges of the section inflamed and sodden and they have a milky appearance and the whole of cornea may become hazy like ground glass. There is intense lacrymation and photophobia and extreme headache.

In such cases dionin acts like magic. It relieves the photophobia and lessens lacrymations and the headache gets less and less and with 2 or 3 instillations of dionin solution 1 or 2 insufflations of solid doinin the whole symptoms disappear leaving a clear transparent cornea and a healed section. I have observed at least a dozen such cases in Balrampur Hospital, Lucknow and in all with excellent results.

In a recent case in this hospital a patient who was suffering from diabetes and was treated here for a month for the same, urine being absolutly free from sugar and acetone, was operated for cataract in his right eye. He developed intense keratitis, whole of cornea being hazy as ground glass and he had no vision. With 3 instillation of solid dionin the whole of cornea cleared up and became transparent.

(d) Iritis after operation due either to local sepsis or to systemic causes such as pyorrhœa in the teeth or syphilis.

In such cases I have found dionin to be marvellous in conjunction with atropine sulph gr. 5 to oz. 1 to control the intense lacrymation photophobia and pain. Dionin enhances the mydriatic effect of atropine and by its anodyne and analgesic effects controls the pain in the eye and the headache and by its lymphagogue action absorbs the exudates and destroys the infective cause.

(e) Sepsis with all the utmost scientific care that any surgeon can take of the patients eye, some cases are bound to get septic. In such cases if on opening the bandage on 3rd day, it is found that only the anterior chamber is full of pus and no panophthalmitis is present at the very start, I put dionin gr. 20 to oz. 1 to the eye with 4 hourly fomentations, blister to the temple, blue pill at night followed by solid dionin on the 4th day and I have found that the spread of sepsis is checked and the patient is saved from the horrible agonies of panophthalmitis and the patient does not get shrinkage of eye ball and phthisis bulbi. In 2 such cases at Balrampur Hospital the patients when leaving the hospital could see a flame. I think this is no mean achievement.

Considering the above-mentioned facts every ophthalmic surgeon in my opinion should keep in his dressing set a bottle containing dionin gr. 20 to oz. 1 solution and a bottle of solid dionin.

2. DIONIN AS SUBCONJUNCTIVAL INJECTION. I have used dionin either as a 1% solution or more effectively the following combination as a subconjunctival injection in corneal opacities, retinal hæmorrhages, detachment of retina etc.

R/ Dionin gr. 5
Cocaine Hydrochlor. gr. 10
Hydrag. oxycyanide gr. $\frac{1}{8}$
Aqua Destil oz. 1

2 to 5 minims of this solution to be injected.

It should be injected after eye has been properly anæsthetised with percaine 1 in 1000 solution.

In diseases of cornea it is injected in the anterior portion of the conjunctiva away from the limbus. In diseases of the posterior segment of the eye ball it is injected in the TENON'S space but not far back.

In such cases where dionin instillations are proving of doubtful value that subconjunctival route should be followed and this time with evident success. There is intense injection of the eye and chemosis of conjunctiva after the injection which sometimes persists for 4 to 5 days.

USE OF DIONIN IN DISEASES OF THE EYE

1. SPRING CATARRH. I have found dionin very good in relieving the itching of spring catarrh and I recommend its use in the following manner :

(a) As drops to the eye :
Zinc gr. 2
Boric Acid gr. 5
Ichthyol gr. 5
Dionin gr. 10
Aqua Distil oz. 1.

(b) As ointment applied to the lids :
Hydrarg. oxid flav. gr. 4
Dionin gr. 10.
Paraffin Moll oz. 1.

2. BLEPHAROSPASM. In phlyctenular conjunctivitis, interstital keratitis and other corneal ulcers dionin is very good. In extreme cases insufflation of solid dionin relieves the spasm in ½ an hour.

3. Non-Ulcerating Keratitis and Corneal Ulcers in Regressive Stage. For relief of pain in corneal ulcers we should not put in cocaine as is generally done by medical practitioners for cocaine deadens corneal epithelium and denudes it and in ulcers we have already diseased epithelium. It is always better to use dionin in place of cocaine, in such cases. It not only relieves pain but due to its lymphagogue action it produces a very good cleansing and bactericidal and antitoxic effect; moreover it helps in regeneration of epithelium.

4. Interstitial Keratitis. Dionin acts favourably to counteract photophobia and pain. It also clears away the cornea by absorption of the material. Its action is very marked in central parenchymatous infiltration of the cornea or keratitis profunda.

5. In abrasions of cornea due to removal of foreign body or due to other causes dionin is very good to counteract pain and irritation. It should be used in conjunction with atropine sulph.

6. Episcleritis and Scleritis. Dionin is used to dissolve away the nodules and also to remove pain and irritation.

7. Vitreous Opacities. Dionin acts marvellously in removing vitreous opacities when given as subconjunctival injections. It is also very good for haemorrages in vitreous.

8. Iritis, Iridocyclitis and Cyclitis. Dionin in gr. 20 to oz 1 solution or in solid state is very good in relieving violent pain of iritis and iridocyclitis, furthermore it absorbs the exudates and thus exerts a favourable influence on the progress of the disease. It also increases the mydriatic action of atropine.

9. Detachment of Retina. Subconjunctival injections of dionin have been found to be useful in such cases.

10. Secondary Glaucoma. Dionin relieves the congestion of the eye and absorbs the exudates and relieves pain. It should be used in conjunction with the usual myotics. As dionin has got a tendency towards increasing the tension of the eye it should be used in all suspicious cases in conjunction with a myotic.

In conclusion I wish to point out that dionin as powder or in gr. 20 to oz. 1 solution is a valuable asset to the ophthalmic surgeon with which he can combat nearly all the complications narrated by me arising out of cataract operation and a large variety of eye diseases commonly met with in ophthalmic practice and that in 9 out of 10 cases his labours will be crowned with success.

Lastly I wish to thank Lt. Col. H. C. Buckley I.M.S., Civil Surgeon, Lucknow, for giving me every facility and encouragement in carrying out these observations.*

*Paper read at the Scientific Section of the IX All India Medical Conference held at Lucknow in December, 1932.

A Plea for the Comparative Study of Plant Medicine.

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If disease be considered a departure from the normal processes of life, and treatment were to include the multitude of therapeutic means, the treatment of diseases must have been contemporaneous with the development of life itself, be it unicellular or multicellular, be it the amoeba or the highly developed human being. The remedial and protective measures adopted by the amoeba are pictured in the passive delimitation of a tuberculous focus by calcification, or its active removal by a surgeon's knife. With the development of will and intellect, the passive processes assume a subsidiary role and could be initiated, coordinated, regulated, or terminated according to a predetermined plan. The cat, the mungoose, the sheep, or the elephant, employ remedial measures just as surely, and transmit their knowledge to their fellow beings just as accurately as the highly developed human being of the present day. This would be mere guess work if it could not have been corroborated by the observations in our daily life. With the development of the intellect, and with the transformation of the spoken idea into an illustrated picture, and of the spoken word into a written token, knowledge began to accumulate and man could rely for information not only on his immediate associates but also on his long past predecessors, whether they belonged to his country or to far-off lands. The pictographs found in the dug out of a cave man can stand favourable comparison with those of a later period. The primitive man used the remedial measures he could procure most easily, the economic condition of to-day expects us to do the same, provided the measures satisfy the criterion laid down in the definition of the word "Cure".

Treatment of diseases with plants is the most ancient of the medical arts in all ages and in all lands, and has often been surrounded by superstition and accompanied by ritualism. The information available at present has been accumulated in the course of various centuries and is the result of innumerable observations made through dire necessity by the primitive man, or is the result of intelligent anticipations made by his decendants more favourably situated. The materia medica of Greeks, Romans, Mexicans, Egyptians, Hebrews, Babylonians, Arabs, Indians and the Chinese are extensive and varied, and has developed along lines either peculiarly national or cosmopolitan. In a tropical and sub-tropical country like that of India, the variety of plant life and its easy accessibility rendered the plants peculiarly subject to use and adaptation in all the walks of life. The Indo-Aryans used the plants for sacrificial purposes and thus paid a silent tribute to the virtues present in them; they sung their praises in numerous hymns, and raised them to the status of minor dieties. Their literature presents perhaps a more extensive knowledge of medicianl plants than does the literature of any other people on earth in that period. Their literature has made valuable contributions to the study of botany, ethnology, and ethnobotany—a study which will become a more important subject when results can be studied comparatively.

We know that the medical practitioners of ancient India were familiar with the drugs of the highest value which are still in daily use in modern medicine. Besides, there are many customs and beliefs still prevalent and pertaining to diseases and their treatment which are shrouded in a sanctity of their own merely because they are old. It is incumbent on us to gain a knowledge of these things as they have an immediate bearing on our own health and welfare.

The question may be asked at the outset—why should we concern ourselves with the medical practices of the ancient peoples and particularly why should we be concerned with their therapeutic methods? No answer can be made to the physician who can ask such a question. Medicine and surgery are ancient arts brought into being in response to one of the first laws of nature that of self preservation. None of the sciences is new and it is not possible for any man to point to a single individual as the first physician, the first physicist or the first chemist. Similarly it is impossible to say of a particular event that it was the beginning of medicine, physics or chemistry. Each of the sciences now-a-days is a highly defined entity seeking its inspiration from a parent science whose origins are lost in the mists of prehistory.

A sure knowledge of the present ought to be based on the firm foundation of an awareness of the past. All good things are not necessarily new. Systematic study of ancient medicine is likely to result in the rediscovery of many lost threads in the web of medical fabric. Failures are likely to result from many such ventures, but they ought not to deter us from the exploration of new avenues of research.

The development of modern medicine is in marked contrast to that of the ancient systems of medicine. Remarkable progress, almost out of proportion, has been made in all branches of modern medicine excepting that of medical treatment, if by the word 'progress' we understand those substantial additions based on experimental evidence. Medical treatment alone has not kept pace, not because it has been neglected, but because of the treatments failing to satisfy the standards laid down in the definition of a cure. Attempts have been made and are still being made to collect and examine critically any information about the treatment whatever its source or however ancient it might be. Much of such work has to be haphazard, and cannot be along definite lines of thought. Correlations are difficult to establish; with the result that every piece of information has to be investigated by itself and on its own merits. In no part of medicine is the magnitude of the task so evident as it is in the study of plant medicines.

Efforts in this direction have been continuous during the last two centuries, not only in centres where modern medicine reigns supreme but also in places, including the most distant ones, every information available, and assimilated into the medical literature, after subjecting it to crucial tests known to the period. The collection of information and the sifting has thus been a co-extensive and continuous process.

Medical science has been making rapid strides from decade to decade and this is in no period so evident as in the last four decades. Physiology is now a respectable part of biology, and pharmacology which was formerly considered a mere adjunct and was designated as applied physiology, is now considered to have an identity of its own. The investigation of the properties of substances, including the plants, is becoming more and more refined and have ceased to be quite the sledge-hammer methods in comparison to the delicate processes of nature. We see thus the apparently curious anomaly of a revival of an investigation which had once been considered exhaustive and completed.

The employment of crude drugs of the ancients gave place to the more active and manageable forms such as extracts or solutions, watery, or alcoholic. They were further analysed and the constituents possessing the important properties of a plant were employed after purification. In the next stage there was a complete revolution in the conception of drug therapy. Instead of remaining content with the properties possessed by the constituents new substances were manufactured which were expected to possess the particular action that was desired. Inorganic salts and chemical substances which had been in vogue were gradually abandoned in favour of derivatives which are the creations of the chemist. "Synthetic Remedies" are still the fashion of the day. But the pendulum of fashion is now swinging from one exterme to another, the oscillations of which were visible even a considerable time before the outbreak of the great war. Chemotherapy and organotherapy have each had their turns, and a reaction seems to have set in favour of plants being used as medicines; it is being increasingly realised that by studying again many a good old drug in the light of recent scientific methods and also by judicious selection from the traditions of popular medicine, advances in therapeutics can be made. A comparative study is helpful in this judical selection, and elimination of wasteful energy. Germany and Austria are at present the pioneers of this revival of the study of plant medicines.

We need medicines and yet more medicines to satisfy the ever increasing demands of the continuously expanding medical science. By medicines however we mean only those which conform to the experimental tests to which they have been subjected. The therapeutic armamentarium of modern medicine is limited and inadequate, although it had and has vast resources at its elbow to draw its inspiration from.

The development of many of the ancient systems of medicines appears entirley one-sided, i. e. more on the therapeutic side than on any other. Methods of investigation are lacking and what few have survived appear to be based more on individual acumen that on instrumental precision. The wide latitude given to individual acumen has played havoc in the province of medical therapy. There were neither standards to judge the medicinal merits of substances including those of plants; nor were there any standards to judge the merits of those individuals who boldly incorporated the drugs into the indigenous pharmacopœia. The indigenous pharmacopœias have thus increased to such vast proportions that even the ardent advocates of those systems, find but little use for it, excepting a microscopical part of it with which they are, by tradition and learning, entirely conversant. Among the various sections of

these pharmacopœias, the plant medicines occupy a dominating position. The history of Ayurvedic system is no exception to the systems of medicine practised all over the world in ancient times.

A large percentage of the knowledge of plant medicine in derived from ancient books and from oral testimony obtained by a few medical enthusiasts who chose to identify themselves with the interests of the country in which they lived. We, in India have mostly obtained our information from the Ayurvedic literature—a literature which occupies such a dominating position in the medical history of India. Uulike the literatures of other countries, it is however, singularly lacking in pictographs and medical statuary, and even the literature itself has all but vanished. Enough of it surviving however to assure us of its importance and to tell us something of its nature. Many reasons exist for the disappearance of the greater part of the literature. The long history of India is a story of conflict, conquest, plunder and destruction. Important texts were committed to memory and minor ones were very likely available in manuscript form. Fewer copies of the manuscripts are made ; time takes its toll, and the manuscript is soon lost to memory, but the texts that have survived from the early periods still form a respectable collection. In spite of its dominating position in India, and in spite of its rigorous advocacy over half a century, it has made almost no impression upon modern medicine ; its portions referring to therapeutics continue however to fascinate even its worst enemies,

The importance of studying the subject of Indian medicinal plants, if it were only to settle the claims made for them, has been recognised ; and the study has recieved and is receiving serious attention in dfferent parts of India, A very large number, perhaps a great majority of these plants, may be found perfectly useless ; but in the present state of our knowledge we are not justified in excluding any from our list.

Accurate information is still needed in all the branches of the study of plant medicines—the identification of the plant that is botanical nomenclature, the identification of parts of plants that is its pharmacognesy ; its medical properties ; its chemical constituents and the changes these constituents undergo under varying conditions of soil, temperature, humidity and season.

The nomenclature of European plants has always been a simple affair. But not so in India. Indian plants were being studied all over India by various botanists, throughout the greater part of the last century. Facilities for exchange of information were few and the literature available for reference was small. There has thus grown up such a multitude of botanical synonyms that it makes identification difficult unless the latest literature be at hand *Acacia sundra* of Beddome is really the *acacia catechu Willdenow* (खदीप, खैर, बाडुक). There is another plant with a similar name—*Acacia sundra,* named after De-Candolle (तांबडा खैर). In synonymes therefore the name of the person who fiirst described it or discovered it, is often the only clue for the correct identification of the plant. The multiplicity of synonyms for the same object is one of the most perplexing evils and an avoidable evil which besets systematic science. The botanical synonyms are important even though they appear conflicting when placed side by side ; they help to remove confusion and ambiguity due to wrong or antiquated botanical being associated with medicinal products.

Botanical nomenclature requires a thorough overhauling to bring it in conformity with the European nomenclature and during the process many of the old familiar names may disappear altogether and be recognised by an older name given to the plant by its first discoverer. *Butea frondosa* (पलाश) would have thus be called *Butea monosperma Kuntz.* Not only the names of the species but even the names of the orders require revision ; even the order may require to be split up into two or more new orders. The order *Leguminosae* would thus disappear and be replaced by three new orders —*Papilionaceae, Cæsalpiniaceae,* and *Mimosaceae.* These changes of sysematic names are not arbitrary. As a rule they are dictated by the progress of scientific research.

The multiplicity of vernacular names for the same plant have often been pointed out as a sign of the indefinite and incomplete knowledge of a plant and as a cause of the confusion that has arisen in the identification of plants. It may seem so to superficial observers, but they are often a great boon to botanists for the purpose of identification. The names often convey an idea of the salient property or characteristic of the plant. Detailed descriptions are difficult to remember, and to the native of a place the salient character often conveys a more definite meaning ; what is true of the native names of India is likewise true of the native names of England, France, Germany, Austria, Hungary etc. The longstring of names found in the German and French languages bear an astonishingly close resemblance to the nature and the number of sanskrit or vernacular names in India. The knowledge or information of varnacular names is often of value to persons not familiar with the system as it helps them to identify a plant even though they have not an elaborate key at hand for such identification. The apparently arbitrary changes in systematic

names no doubt discourage the student and until they have obtained some stability the vernacular names merit attention and study.

It is interesting to note here that the study of the names of a plant receives additional corroboration from the study of the names of the same plant in different countries of the world, even though they be poles asunder and even though their civilizations have never come in contact with one another. Such a corroboration from independent non-Indian sources adds not only zest to the study, but is a silent testimony of the acumen of people interested in plant medicine. A great deal of time and trouble will be saved by thus giving the vernacular names of plants the importance they deserved.

From a literary and ethnological point of view the study of the names themeselves would through an astonishing light on the civilization of the distant past. We would know their primitive ideas and conception of plant life, the effect of a particular plant distribution on the lives, customs, religious thoughts and every day practical affairs of the people studied, the extent of the knowledge of the parts, activities, and functions of plants, the categorical grouping of names and the folk-lore that surrounds them. "Soma" identified by some as *Ephedra vulgaris, Ocimum sanctum* (तुलसी) *Ficus religiosa* (पिपंल) are but a few of the illustrations which comprise a history of the nation in themselves.

There is one great drawback however to the rich store we possess in the vernacular names. It is not everyone much less a botanist or a medical man, who can decipher and dilate on the inner meanings of these names, even though they be in the vernacular language with which he is most familiar. An attempt should be made to give explanatory notes to the plant names recorded from every language in the world. The little study that some of us have made, illustrates clearly that a majority of the conceptions, about plant properties, held all the world over, agree astonishingly closely and help to fill up the lacunae found in the knowledge we obtain of a plant from the study of the names alone.

The information supplied in the literature regarding that part of the plant which possesses the required medical properties is often vague. Collateral information is found extremely useful and throws occasional light on the reasons for the selection of the part mentioned ; it brings out in relief some obscure properties which help one to account for the influence of soil, season, temperature and humidity on plant life. All parts of the plant are not neccessarily alike in the exhibition of their characteristic properties. Since the therapeutic property of a constituent in the plant, is proportionate to the amount of the constituent in the plant, we find that roots are most active before or after the vegetative period ; stems at the commencement of flowering, belladonna leaves during the first half of flowering, hyoscyamus and strammony when the flowering is in full bloom and conium when the flowering is over, cold and wet years cause low yields of the constituents.

Another important factor to be borne in mind is the association of property with moist or dry condition of the plant. Roots show the greatest loss of property after drying ; then the steams and the leaves ; ripe seeds lose less of their property than any other parts of the plant, especially seeds with a hard testa like that of *Nux vomica*. Staleness of all degrees is met with in the plant products sold in the bazars of India and is due to carelessness in drying and to collection out of season.

For the plant medicines to be really useful to the general practitioner, one has to take into account the adulterations that are commonly met with in the bazar medicines, adulterations which are sometimes deliberate and sometimes inadvertantly made.

Adulterations are difficult to detect unless they be very gross. Pharmacognosy is of little avail and other outside helps have to be sought for such detection. This is particularly true of plant medicines parts of which are imported from far oft climes. Arjuna of the Ayurvedists is for instance often found adulterated and only a comparative study of the various species of the genus *terminalia* could enable one to point out that the Arjuna of the Ayurvedists is not *Terminalia arjuna* of the botanists but *Terminalia tomentosa*.

Comparative study helps to bring into prominence properties of plants which would otherwise be overlooled. *Cyperus rotundus* (मुस्ता) forms an important constituent of the Chinese drug *"Hsingfutzu"* and of the Japanese drug *"Kobishi,"* used as emmenagogues in that country, a property that is not so prominently mentioned in India. The essential oil of *Cyperus rotundus* deserves to be studied pharmacologically for its action on the generative organs. *Corudalis govaniana* (मुलके शी) ought on compative evidence to possess the properties of morphia and be useful in Parkinsonian disease.

Compartive study also helps to draw our attention to those indigenous plants which have not been used medicinally by the natives of our country. The study of the Indian *Ephedras* was stimulated by the studies in China. We also now know that not all *Ephedras* possess the characteristic properties and some any be entirely devoid of them because of the absense in them of ephedrin and pseudœphedrin. *Ephedra alata* of Morocco is on the other hand a valuable soure of ephedrin on account of its very high alkaloidal content ; whether the high alkaloidal content is due to soil and atmospheric conditions

of Morocco, or is due to a characteristic inherent in the plant itselt can only be revealed when plantations of the same are made in other countries. Everyone knows that plants owe their virtues as medicinal agents to certain characteristic alkaloids, glucosides and other principles present in them. It is being gradually realised however that it is not always the alkaloid that epitomizes in itself the characteristic properties of the plant and deserves to be designated as the active principle. Conessin, the alkaloid of the *Holarrhena antidysenterica* is a good illustration of a fallacious belief. In whatever constituents of the plant the active property may lie, the study of alkaloids serves however a very useful purpose of providing us with an easy and accurate means for standardization of drugs.

The term "Active Principle" ought really to disappear from our vocabulary. *Butea frondosa* has repeatedly been found a fairly good ascaricide. Chemistry has not yet however been able to point out to what constituent the ascricidal pharmacophore belongs. In spite of numerous analysis the crude drug still continues to be superior to any of its properties of *Melia azadirachta* and *Semecarpus anacardium* has yet to be found. Among this same group may be listed the various wound healers (e. g. *Tridex procumbens*), which on analysis prove neither to be bactericidal, nor hæmostatic, nor active cell-producers. It should be borne in mind therefore that chemical analysis reveals but imperfectly the real nature of any of the plant medicines. The dissociation and disintegration processes of chemistry are like sledge-hammer method when compared with the delicate and balanced processes of nature. It has also to be remembered that not all the phenomena of plant life can be explained in terms of chemistry and physics. We have to recognise the existence of vital forces identical perhaps with the vitamins of the present day. Fresh juices of plants might not easily be supplanted by tinctures and extracts of the same. I would like to make special mention of fact that is often lost sight of, that even individual plant medicines are a prescription in themselves. Examining carefully the pharmacological data published in many of the papers, we find that the actions on the different systems are often complementary to each other. *Gymnema sylvestre* (मेषश्रंगी) lowers the blood sugar in diabetes; it also contains anthraquinones which stimulate the intestinal tract and the biliary region; there are also other constituents which exert a digitalis effect on the heart. No one would however dream of isolating the digitalis-like portion, or the anthraquinones from *Gymnema sylvestre* when other convenient and cheaper means are at hand. *Meomordic-acharantia* (कारले) seeds contain an anthelmintic principle in the embryo, and the seed contains a purgative oil, which nature appears to hold at ready disposal for the driving out of the dead or stunned parasite worms.

Comparative study as in the case of the *Ephedras* or of *Artemisia* would help us to reduce the work of drug cultivation to an exact science, and to determine the commercial possiblities of the most promising plants in the same manner as has been done in agricultural and other economic farms.

Indian medicinal plants ought to be widely studied and largely used by medical practitioners in this country, and should not be contemptuously referred to as "Native Remedies". With proper advocacy it will not be long before the pharmacology and chemistry of the best of them is properly investigated. Such a study even though it be not immediately productive of usefnl results, might give a new impetus to chemo-therapy. If it be remembered that 3% of the drugs used in the British Pharmacopœia of 1914, were in use among the Egyptians, and 50% were in use among the Indian and Arab Physicians, there are grounds for the hope that many more gems may be garnered from the rich flora of India, by the application of recent methods of research in chemistry and pharmacology.

I have not edeavoured to compass in this short plea a complete survey of the possibilities of a comparative study. It would have meant laying before you details which would be fascinating only to the most interested workers. I have endeavoured to show to you that plant medicines can still bear research, that a comparative study is likely to yield fruitful results.

The advancement of every science depends upon the persistent and relentless toil of its research workers, and there is alive today a spirit of enthusiasm and energy which can not fail to achieve great things. Happily for research in general, the Government is becoming increasingly aware of its obligations in regard to the provision of adequate funds and to the need for more and more research.

We must assist in dispelling the idea which still exists in the mind of the profession that this study is a mere legerdemain and that its importance is heightened by a rigmarole of complex terminology.

Learning is less aggressive now-a-days than it was fifty years ago, because scientific men realise more the limitations of their own work; no sooner do we begin to understand an accepted explanation than it is obsolete. There is no finality. Happily however the work of helping the world forward does not wait to be done by perfect men, and every addition to store of knowledge serves as a stepping stone to further progress and discoveries. None need despair. *

*Read at the Poona Branch of the Indian Medical Association.

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Editorial Comments

Chemo-therapy in Tuberculosis.

Ever since the bacterial origin of tuberculosis has been proved by ROBERT KOCH, efforts have been made to find a pharmacological agent which will destroy the cytoplasm of the tubercle bacilli within the infected organism without simultaneously injuring the cells of the host. Many of these bactericides, though they inhibit the growth of tubercle bacilli *in vitro*, have failed to show the effects in experimental tuberculosis in animals and in spontaneous disease in man. Experiments with various metals, such as copper; gold, iodine etc. have failed to achieve the result. The work of MOLLGAARD, MADSEN and MORCH, at Copenhagen, who noticed retrogression of the tuberculous foci and retardation of their growth leading to complete healing with sanocrysin, a gold preparation, in experimental animals has been seriously questioned by many. It is yet the dream of many workers to find a drug which will be effectively bacteriotropic but mildly organotropic.

It has been thought that the tuberculous tissue allows the diffusion of crystalloids much more than the colloids and the reticulo-endothelial system takes an important part in the immunising process. The avascularity of the tuberculous tissue, aided by the histiocytes of the connective tissue, favours, to some extent, the accumulation of the drug in it and may seem to aid the healing processes in some way. It is now admitted, particularly after the experiments of SWEANY, WASICK and others, that gold and other heavy metals do not exert a specific action on tubercle bacilli by killing them but that they stimulate and tune up the cells of the body generally, just as protein bodies, lipoids and other irritants do, to make good certain defects in the processes of immunity which we do not understand clearly to-day.

Taking the cue from the ancient Hindus and from KOCH himself (1890), gold has been the most widely experimented and employed of elements. The names of MAYER, BRUCK and GLUECK, SPIES and FELDT and of MOLLGAARD are associated with later developmeuts on the subject. Of the less toxic preparations, krysolgan (a sodium salt of 4—amino—2 aurothiophenol carboxylic acid) was one of the first to be tried but it did not realise the expectations. MOLLGAARD re-introduced sanocrysin (a double thio-sulphate of gold and sodium) in 1924 and it has since been most extensively used in all parts of the world. It is now admitted that it has a distinct therapeutic value in certain conditions and within certain limitations. Various preparations then came in quick succession—solganal (a disodium salt of 4—sulpho—methylamino 2 auromercapto—benzene—1 sulphuric acid), solganal B (auro-thioglucose), lopion, triphal and aurophos in Germany, lipochrysol, aurothysin, allochrysin and A. K. B. in France and crysalbine in England, besides other less important preparations in various countries. It is difficult to assess the value of every preparation in a short note but we shall try to indicate the most generally accepted findings. Until lately sanocrysin and certain other water-soluble gold preparations had to be administered by the intravenous route but lately oil suspensions for intramuscular injection have been introduced to minimise the tendency of these heavy metals to irritate the kidneys in the process of elimination through the epithelium of the convoluted tubules and to avoid the toxic reactions on the skin and mucous membranes. In the beginning, large doses were employed and many disasters were encountered, but the present tendency is to employ smaller doses but suffi-

cient enough to give gentle and repeated stimulation to the tissues, avoiding strong general reactions and the appearance of albumen, R. B. C. or casts in urine. Indian patients do not, as a rule, support the higher doses employed in Europe so well and the best results have been obtained using smaller doses and gradually working up to about half or two-thirds of the highest dose usually employed in Europe. It is a matter for speculation yet as to why it is so.

It is difficult to assess accurately the value of a method of treating tuberculosis as no two cases are alike and because it is difficult to keep side by side a suitable group of controls. But it must be generally agreed now that it is a valuable adjuvant in the treatment of phthisis. GRAVESEN and his collaborators in Danemark have given some statistical proof of the effect of sanocrysin on the sputum and it has been shown that, since gold salts have been used, the percentage of cases, sputum-positive on admission into Sanatorium, who became negative before discharge, has been greatly increased. In addition to the disappearance of tubercle bacilli, it is usual to find a diminution in the amount of sputum and improvement of cough. The sedimentation rate rises and the x'ray appearances show gradual retrogression.

Cases whose reticulo-endothelial system is intact and reactive and who show recent exudative lesions with a slight degree of toxaemia show the best results. Fibroid cases with foci of fresh activity often improve but it is difficult to get lasting results. Gold injections are useful in artificial pneumothorax cases which show an active infiltration in the contra-lateral lung. Rapidly advancing broncho-pneumonic and miliary cases as well as cases having or having had nephrosis or extensive skin disease or with maximum daily temperature of over 102 F. or with intestinal tuberculosis are definite contra-indications. Patients who are rapidly losing weight or fail to gain weight are rarely benefited, and may even be harmed, by gold therapy. Tuberculous laryngitis is quite likely to be benefited either directly or as a result of diminished cough and sputum.

Since it has so many limitations about its use, tests have been devised from time to time such as KAUFMANN's method of determining the condition of the reticulo-endothelial system or the hæmogram index of HOUGHTON, to determine the type of case most likely to be benefited by gold therapy. Provided a case is carefully sorted out and watched with such controls as the temperature and pulse-rate curve, frequent urine examination, the sedimentation rate, SCHILLING index and skiagram, there is a definite class of cases in which gold therapy, with judicious dosage, can change the aspect of a case.

Current Medical Literature

MEDICINE

Haemoptysis and Blood Pressure

J. OLIVET (Zeitschr. f. tuberkulose. Ref. Medical World, Oct. 13,1933), emphasizes that the cause of haemoptysis is not an increased blood pressure. During the course of haemorrhage, the blood pressure was tested in eleven patients and found to be distinctly lowered. The same lowering of blood pressure was observed in each of 100 cases of pulmonary tuberculosis at all stages of the disease. The author considers this lowering of blood pressure to be due to the toxaemia of tuberculosis and that it is the actual cause of haemorrhage. Hence contrary to the accepted teaching, he advocates free administration of stimulants if necessary.

J. C. B.

Acute Transitory Cerebral Manifestions in Infants and Children

A. LEVINSON, (Jour. Amer. Med. Assoc, 764, Sept. 2, 1933) as a result of his study of eighty children with acute cerebral manifestations, draws attention to the frequency of such symptoms as : Brudzinski. Babinski and Kerning signs, rigidity of the neck, drowsiness. convulsions, hemiplegia, coma, ptosis and facial palsy and to their transitory nature varying in duration from twenty four hours to forty-eight hours followed by a complete recovery or by otitis media or pneumonia. The underlying causes in his series in order of frequency, were pneumonia, infection of the upper respiratory tract, otitis media, pyelitis and rheumatic fever. In three, the cause was not detected. Contrary to the usual belief, the pneumonia was mainly in the left lower lobe. The biochemical findings of both blood and cerebrospinal fluid were nothing abnormal excpept a raised sugar content in blood and spinal fluid, the latter showing some increase in amount and pressure with normal cytology. In diagnosis, the author points out to the necessity of considering the mode of onset, physical signs, associated diseases, and the transitory nature of the cerebral symptoms.

In most cases of meningitis, according to the author, the respiration is increased either not at all or only slightly. So will the presence of petechiae on the skin or conjunctiva speak for meningococcemia. As regards treatment, it is not required in some cases. In others, intramuscular injections of 10% magnesium sulphate have been helpful in relieving convulsions. The pathological process existing in acute transitory cerebral manifestation is difficult to determine beacuse the patients recover. The author suggests the existence of an underlying constitutional factor associtated with the oedema of the brain.

J. C. B.

Artificial Pneumothorax in Tuberculous Children

P. ARMAND DELILLE, C. HETCHTER and A. MAGRIN (Rev. de la tuberc. 13: 753,1932, Ref. Amer. Jour. Dis. Child, 636, Sept. 1933) point out that artificial pneumothorax even in young infants is without danger or risk, and the beneficial effects are incontestable. In older children, even in the presence of cavitation, unilateral collapse almost always gives good results. In the ulcerocaseous form, pneumothorax is the only effective therapeutic measure. In patients with adhesion that precede or follow the pneumothorax treatment, the authors reconmend oleothorax. The prognosis in young infants is somewhat less favourable, but it is better in those who survive till the second year. In case of cavities, pneumothorax is the only measure that prevents a generalised spread, and saves the infant. In epituberculosis the spontaneous regression is possible and hence pneumothorax—should not be instituted until there are evidences of extension of the diseased process with loss of weight and appearance of other symptoms.

J. C. B.

Diagnosis and Treatment of Injuries of the Head

W. E. DANDY (Jour. Amer. Med. Assoc. 772, Sept. 2, 1933) emphasizes on the fact that alterations in skull as a result of injury are of relatively minor importance. Changes produced on the intracranial contents, i. e. the brain and its vessels are the essential factors that influence life in a case of head injury. Radiograms of the skull are of almost no use in acute injuries of the head ; they are a waste of money, a misdirection of diagnostic effort and only too frequently, a critical tax on a seriously ill patient.

Regarding treatment, the author points out that only in cases of extradural haemorrhage it is possible to remove the cause where evacuation of the haematoma and ligation of the bleeding artery are indicated. In all other

instances of acute head injuries, the treatment should be directed to the increased intracranial pressure caused by haemorrhage and oedema in varying proportions. Nature tries to compensate for the increased intracranial pressure by withdrawal of fluid from the ventricular system and the subarachnoid space into the blood.

As long as there is compensation for increased intracranial pressure, absolute rest is indicated. All unnecessary and harmful or potentially harmful treatments should be avoided. The author is strongly opposed to lumbar punctures and dehydration by intravenous injections of concentrated dextrose or sodium chloride solutions. 70% of all patients with severe injuries of the head will recover spontaneously under absolute rest. If left alone, the remaining 30% will die. From this group, however, about one-third can be saved by well-timed and properly-performed subtemporal decompression on right side under local anæsthesia, where the following signs of failure of compensation for the increased intracranial pressure appear.

(1) Restlessness followed by loss of consciousness and deepening coma,

(2) Involuntary micturition or defaecation,
(3) Arising or rapidly varying pulse rate,
(4) Rapid, irregular, shallow respiration or CHEYNE-STOKES breathing,

(5) Progressive rise of the rectal temperature above 102° F. the temperature being recorded every fifteen to twenty minutes during the period of danger.

Considering the late effects of cranial injuries, the author emphasizes on the necessity of an accurate diagnosis before the suitable form of treatment can be decided. Excepting in inflammations, there is a high percentage of complete recoveries and with very little risk.

J. C. B.

Sodium Morrhuate in Injection Treatment of Varicose Veins

W. M. COOPER (Amer. Jour. Surg. 408 Sept. 1933) has used sodium morrhuate in 5 per cent strength in a series of more than 500 patients with approximately 4000 injections. He usually injects from 0·5 to 3 c.c. of the solution at any one site, as a rule the highest point in any vein being chosen for the first injection. Injections are repeated every second day and in no case more than 5 c.c. of the solution is injected at a time. He summarises his observations as follows:

(1) Sodium morrhuate in 5 per cent strength does not cause toxic symptoms when used in the proper quantity.

(2) Injection into the perivenous or subcutaneous tissues does not produce an ulcer or slough.

(3) Under proper asepsis it does not produce an infectious phlebitis.

(4) The various objectionable symptoms, e. g. pain, cramp and systemic reactions and sequelae, e. g. slough, residual discoloration and nodulation which result from injection of other solutions, do not occur with the use of sodium morrhuate.

(5) Five per cent sodium morrhuate is a safe and effective sclerosing agent in the injection treatment of varicose veins.

J. C. B.

Surgery of Sympathetic Nervous System.

P. G. FLOTHOW and G. W. SWIFT (Amer. Jour. Surg. 345, Sept. 1933) in a review of 100 sympathetic ganglionectomies conclude that

(1) Sympathetic ganglionectomy is very successful in properly selected cases of Raynaud's disease, Buerger's disease, scleroderma and other conditions associated with vasospasm. Results of sympathectomy in Raynaud's disease of lower extremities are better than for that of the uppers.

(2) In suitable cases of chronic atrophic arthritis it affords considerable relief.

(3) Left lumbar ganglionectomy is highly successful in Hirschprung's disease and in chronic disabling constipation. There have been no failures in this type of case.

(4) In cases of spastic paraplegia of the lower extremities due to birth injury, the operation is well worth while in carefully selected cases. It is of no value in spasticity of the upper extremities.

(5) Traumatic sympathalgia is offered as a name for painful conditions caused by trauma and mediated by sympathetic nerves. The results of ganglionectomy in such cases are excellent.

(6) Operations in cases of painful amputation stumps where the majority of the cases have a central type of pain, are rarely successful.

(7) Some cases of atypical facial pain may be relieved by sympathetic ganglionectomy. The authors advocate diagnostic injection of the sympathetic nerves before selecting cases suitable for sympathetic ganglionectomy. Lastly they recommend the extra-peritoneal lumbar approach as one attended with no mortality.

J. C. B.

Sympathetic ganglionectomy in post-encephalitic Parkinsonian syndrome

C. E. REES (Amer. Jour. Sug. 411, Sept. 1933) as a result of his observations on sympathetic ganglionectomy in three cases of ost-encepalitic parkinsonian syndrome, suggests the interruption of sympathetic impulses as a therapeutic measure. The mechanism by which the sympathetic nervous system affects the voluntary muscles is not explained by the author. But from his practical experience with results of sympathetic ganglionectomy he is convinced that it has an influence on the voluntary muscles as far as a spastic disturbance of the neuro-muscular control is concerned. According to the author, the following results may be expected from sympathetic ganglionectomy in cases of encephalitic parkinsonian syndrome.

(1) In cases where spasticity is the predominating symptom, there may be lessening of spasticity and increase in initiation, control and speed of voluntary action.

(2) In cases where spasticity and tremor are both prominent symptoms, there may be lessening of spasticity, improvement of voluntary control and increase in the tremor's speed and amplitude.

(3) In cases where tremor is the predominating symptom, the tremor may be slower in starting and attaining its maximum amplitude but once the maximum is reached, the speed and amplitude of the tremor may be greater than before sympathectomy. Lastly, the author points out that sympathectomy is suitable where spasticity and not tremor is the predominating symptom.

J. C. B,

Results of Lumbar-Sympathectomy in Thrombo-angitis obliterans

E. D. TELFORD and J. S. B. STOPFORD (Brit. Med. Jour. 173 Feb. 4. 1933,) record the results of sixteen casses of sympathectomy done for thrombo-angitis obliterans. With most patients the first complaint was intermittent claudication, with sensation of severe pain, rigidity or constriction about the half of the leg—all the cases bilateral. They tried all methods of treatment without success and finally were led to try the effects of an extensive sympathectomy owing to the fact that thrombo-angitis obliterans contains an element of vasospasm. The operation consists in removing on both sides a section of the lumbar sympathetic cord which included the second, third and fourth lumbar ganglia. In attempting to assess the clinical results they have grouped them as follows :

Good :—Free from pain and able to walk well—9,

Fair :—Improvement as regards pain and general condition but little as regards working capacity—3,

Unsuccessful:—No improvement or subsequently requiring amputation.....4,

A. N. R.

The Treatment of Chronic Ulcers of the Leg.

M. UMANSKI (Birt. Med. Jour. 885, May, 1932) reviews the different methods and remedies recommended for the treatment of chronic ulcer of the leg and finally gives a principle of rational treatment founded on the principle of osmosis for the capillary drainage of the ulcer and the choice of suitable antiseptics which can simultaneously disinfect it as well as promote repair of tissues by stimulating granulations and epithelization. His methods of treatment resolve themselves into :

(1) Washing the affected limb with warm water and soap.

(2) Applying over the ulcer a pad of sterile lint soaked and wrung out of a 1½ per cent solution of hydrogen peroxide for half to three-quarters of an hour.

(3) Removing the wool and drying the surface of the ulcer with sterile gauze and dressing the surface of the sore with a gauze soaked in 8 to 10 per cent solution of balsam of Peru in glycerin to which 5 per cent of alcohol is added.

A. N. R.

RADIOLOGY AND ELECTRO-THERAPEUTICS

Value of Radiology in the Diagnosis of Perforated Peptic Ulcer

R. T. VAUGHAN and H. A. SINGER (Amer. Jour. Surg. 394, Sept. 1933) report from a study of the available statistics of their own material and those of KUDLEK that spontaneous pneumoperitoneum is present and can be detected radiologically in about 85 per cent of patients with perforated peptic ulcer. In their recent series of 97 cases diagnosed as ruptured ulcer during the years 1929-1931, free air was found in 70-75

per cent of the patients examined. The decrease in the incidence of pneumoperitoneum in their recent series is explained to be due in a large measure to increased recognition of a class of perforations that were previously overlooked. These cases with a small amount of leakage and with a subsequent picture of perforative peritonitis of a limited extent and short duration are designated by the authors as *forme fruste* perforations. Immediately or shortly after perforation, the hole becomes plugged, sealed or covered in these cases. As a result only a minimal amount of fluid escapes frequently unaccompanied by air. The mildness of the post-perforative symptoms often leads to an error in diagnosis. The roentgen examination is simple in technique. Fluoroscopy is all that is required and by this method the presence or absence of air can be determined at a glance. The examination is made with the patient placed on his left side on a cart which is wheeled behind the fluoroscopic screen. It is unnecessary to place the patient in a sitting or other position.

J. C. B.

Roentgenological Study of Pyloric Obstruction

MAURICE FELDMAN (Amer. Jour. Surg. 376, Sept. 1933) from a survey of 125 cases of pyloric obstruction in a series of about 10,000 gastro-intestinal roentgen examinations draws the following conclusions.

(1) Pyloric obstruction is not an uncommon complication. It was found in slightly over 0·01 per cent of all gastro-intestinal roentgen examinations and in approximately 10 per cent of all organic lesions involving the pyloro-duodenal outlet.

(2) Radiologically it is not always possible to distinguish between an ulcer and carcinoma in cases of pyloric obstruction.

(3) Gastric dilatation and the degree of gastric retention cannot be considered as an aid in the differential diagnosis between ulcer and carcinoma.

(4) There is no radiological basis for the assumption that a dilated stomach is more likely to be due to a benign obstructive lesion or that an obstructive normal-sized stomach may be due to malignant disease.

(5) The presence of a tumour mass is an important sign of malignancy but this also is not always demonstrable.

(6) The radiological examination, though extremely important in the diagnosis of pyloric obstruction, must be considered with other factors in order to establish the final diagnosis.

J. C. B.

Correspondence

[The Editor is not responsible for the views expressed by correspondents]

Medical Reciprocity

To The Editor

Sir—A press communique has been issued by the Public Health Department of the U. P. Government announcing that the Government of India has imposed certain conditions in order to render vaccination certificates of passengers sailing from India 'acceptable to foreign countries'. First, they must be granted by registered medical practitioners; secondly, these should be countersigned by civil surgeons, port health officers, and district and municipal officers of health. It further lays down that the countersignature must be obtained 'by the registered practitioner concerned', in other words it is none of the passenger's business to obtain the counter-signature. It goes without saying, no countersignature is necessary if vaccination certificates are signed by civil surgeons, port health officers, and district and municipal officers of health.

Vaccinators, who by the way, are not registered medical practitioners are appointed by district boards and municipalities and their work is supervised by the medical officers of health concerned in areas. It is seldom indeed that a registered practitioner will be called upon

to vaccinate unless he happens to be the family doctor of the passenger. It would have been in the fitness of things had the communique directed that the signature and counter-signature of the vaccinator and his superior officer respectively, viz., the medical officer of health, should be appended. Instead of this it requires that vaccinations performed by registered practitioners should be certified by officers employed or controlled by Government before such certificates can be accepted by the public health authorities abroad. The natural conclusion is, unless it is authoritatively denied, that the written statement of a registered medical practitioner of India cannot be trusted while acting alone, in as much as, he is incompetent, irresponsible or worse still, dishonest. If that is the real reason why should he have been registered at all? By registering such an unsuitable man the reputation of Government is not enhanced.

The select committee appointed to discuss the Medical Council Bill is said to have dealt with the difficult problem before it with great success. The question of reciprocity came up for consideration among other things. If the spirit of the communique was to be followed it meant that at least two registered medical practitioners of India, if one of them had the misfortune of being a private practitioner, were equal to one registered practitioner of a foreign country in competence and honesty, on the assumption that no such humiliating practice was in vogue in that country. It would be interesting to know whether the brain wave or series of brain waves which brought the precious communique into being had taken place before the select committee met and gave it an opportunity of defining reciprocity in the light of facts revealed by the document. It should at any rate give food for reflection to those seriously interested in the growth of the indepdent medical profession of India.

S. K. CHAUDHURI
M.B.E., B.A., M.B. Capt. (late I.M.S)
Member U. P. Medical Council,
Chief Medical Officer,
Benares State.

Benares, Sept. 26.

Medical Matters in Legislatures

Legislative Assembly

1st September 1933

Objectionable Advertisements in Newspapers

RAI BAHADUR M. C. RAJA drew the attention of the Government to the remedies for impotency, health, strength, vigour, birth-control etc. appearing in the newspapers and said that while such advertisements are forbidden on the Continent and in England, they were being tolerated in India. He enquired if the Government had analysed any of these medicines, and if it was contemplated to legislate in order to prevent the public from being swindled by these advertisements.

MR. G. S. BAJPAI in reply stated that it is a matter of common knowledge that such advertisements are published in newspapers although Government have no detailed information. Government have not analysed the medicines, but understand that a certain number have been analysed in England and other countries. The proposed legislation is already under the consideration of Government in connection with the report of the Drugs Enquiry Committee.

Muslim Doctors in Haj-ships

In reply to a question by MR. MASOOD AHMED, the member in-charge informed the House that all the doctors in charge of hospitals on the pilgrim ships during the last Haj season were not Muslims. He further stated that provision has been made in the new Rules, which will be published shortly, so that every medical officer and attendant employed in a pilgrim ship should preferably be a Muslim.

At this point, Mr. N. M. JOSHI enquired whether it was the policy of the Government to provide communities in this country with doctors on communal lines. The member replied that this is a special case because the ships are utilized exclusively by Muslim passengers. MR. JOSHI wanted to know that if a particular village or part of the country occupied by the Hindus will only be provided with Hindu doctors. In reply the member informed the House that Medical Administration being a transferred Provincial subject, the question might be addressed to Ministers in Provinces. On an enquiry from MR. LALCHAND whether there was any specific demand that there should be MOHAMEDAN doctors, the House was informed that was the recommendation of the Haji Enquiry Committee.

Association Notes

Bengal Branch

Through the efforts of some enterprising members, the Bengal Branch of the Association has succeeded in arranging a series of Entension Lectures on Cardio-vascular System for the year 1933, a tentative scheme of which is appended below.

Serial No.	Date & Time.	Subject.	Speaker.
1.	27.11.33 — 7 P.M.	Opening Address	Sir Nilratan Sircar.
2.	27.11.33 — 8 P.M.	Anatomy of the heart and of the great vessels ...	Dr. A. K. Roy Chowdhury.
3.	28.11.33 — 7 P.M.	Physiology of circulation (central) ...	Dr. S. M. Banerjee.
4.	28.11.33 — 8 P.M.	Physiology of blood vessels	Dr. S. K. Sen.
5.	29.11.33 — 7 P.M.	Pathology and morbid anatomy of the heart	Dr. M. N. De.
6.	29.11.33 — 8 P.M.	Pathology and morbid anatomy of the great vessels ...	Dr. C. C. Bose.
7.	1.12.33 — 7 P.M. to 8-30 P.M.	Clinical diagnosis of heart diseases ...	Dr. H. Ganguly.
8.	1.12.33 — 8-30 P.M. to 9-15 P.M.	Radiology in the diagnosis of the diseases of the heart and great vessels	Capt. M. Mukherjee.
9.	2.12.33 — 7 P.M.	Functional disorders of the heart ...	Dr. B. C. Roy.
10.	2.12.33 — 8 P.M.	Etiology and diagnosis of valvular diseases of the heart and vessels ...	Dr. D. C. Mazumdar.
11.	4.12.33 — 7 P.M.	Syphilitic and rheumatic diseases of the heart	Dr. J. C. Banerjea.
12.	4.12.33 — 8 P.M.	Congenital diseases of the heart ...	Dr. B. B. Saha.
13.	6.12.33 — 7 P.M.	Infective Endocarditis	Dr. P. Nandi.
14.	6.12.33 — 8 P.M.	Pericarditis ...	Dr. Indu Bose.
15.	8.12.33 — 7 P.M.	Essential hypertension and its treatment ...	Lt. Col. J. C. De.
16.	8.12.33 — 8 P.M.	Cardiac conditions in relation to acute infections, thyrotoxicosis and pregnancy ...	Dr. A. K. Roy Chowdhury.
17.	9.12.33 — 7 P.M.	Electrocardiogram—normal and abnormal conditions and its value in clinical medicine ...	Dr. S. C. Bose.

Serial No.	Date & Time.	Subject.	Speaker.
18.	9.12.33 — 8 P.M.	Cardiac irregularities	Dr. S. C. Bose.
19.	11.12.33 — 7 P.M.	Physiology of coronary circulation and clinical manifestation of coronary thrombosis ...	Dr. U. N. Brahmachari.
20.	11.12.33 — 8 P.M.	Angina Pectoris ...	Dr. J. N. Dutt.
21.	11.12.33 — 8-30 P.M.	Arteriosclerosis and senile heart and prognosis in heart diseases ...	Dr. S. C. Gupta.
22.	13.12.33 — 7 P.M.	Pharmacology of cardiac drugs ...	Dr. B. N. Ghosh.
23.	13.12.33 — 8 P.M.	Therapeutic uses of cardiac drugs	Dr. S. C. Bose.
24.	15.12.33 — 7 P.M.	Cardiac conditions in relation to general anæsthesia and operations	Dr. P. N. Roy.
25.	15.12.33 — 8 P.M.	Cardiac failures and its treatment	Dr. N. R. Sen Gupta
26.	16.12.33 — 7 P.M.	Surgery of the cardio-vascular system ...	Dr. Subodh Dutta.
27.	16.12.33 — 8 P.M.	Value of ophthalmological examinations in cardio-vascular diseases ...	Dr. B. N. Bhaduri.

A nominal fee of Re. 1/- for the members of the Indian Medical Association and Rs. 3/- for non-members have been fixed by the Committee. The seats being limited, priority of claims will be observed. Intending members will communicate at the office of the Association between 5 to 9 P.M. on week days.

X All-India Medical Conference

The X All-India Medical Conference will be held at Bombay during the ensuing Christmas week. The dates of the Conference as provisionally fixed are 27th, 28th and 29th December 1933. Invitations are extended on behalf of the Reception committee formed at Bombay to all the members of the medical profession and medical associations all over India. Dr. G. V. Deshmukh, M. D. (Lond.), F. R. C. S. (Eng.) of Bombay has been elected Chairman of the Reception Committee and Dr. M. A. Ansari, M. D., F. R. C. S. has been elected President of the Conference.

In order to make the Conference at Bombay thoroughly representative of the medical profession of India, as in the case of the previous conferences, it is necessary that the co-operation of the members of the various associations should be freely given to our Bombay colleagues in the successful organisation of the Conference. As on previous occasions this Conference will consider many important problems affecting the vital interests of the medical profession of India.

There will also be a *Scientific Section* where Scientific papers well be read and discussion

on interesting case notes will take place. Our Bombay friends count on the help received from the members of the different associations in this matter. Those members desirous of taking part in the Scientific Section, are requested to send a synopsis of the paper which they intend to read either to the undersigned at the address given below or to Dr. V. N. KHANOLKAR (Bombay), Chairman, Scientific Sub-Committee, X All-India Medical Conference, Bombay, by the 15th of November. Papers read at the Scientific Section of the Conference will be published in the official journal of the Indian Medical Association and may not be published in any other paper without the sanction of the Journal Committee.

There will be an Exhibition of Medical and Scientific Products along with the Conference which will afford unique opportunities to manufacturers and dealers in medical goods. Intending exhibitors desiring to book stalls are requested to communicate with Dr. K. K. DADACHANJI, Bombay, Chairman, Exhibition Sub-Committee.

Owing to shortness of time it has not been possible to extend invitations individually to members of the profession all over India. It is hoped a large number of delegates will attend the Conference to help the deliberations and take part in the Scientific Section. The Delegation Fee has been fixed at Rs. 5/-

The Conference is open to medical men in Government service and there is nothing to hinder their attendance. Their participation will be welcomed, particularly in the Scientific Section, in view of the great assistance such men are usually in a position to give.

Delegates intending to attend the Conference are requested to communicate with Dr. D. D. SATHAYE, F. R. F. P. S., Secretary, Reception Committee, Xth All-India Medical Conference, 127, Girgaum Road, Bombay 4, for accommodation, etc. Further particulars will be supplied on request by the Reception Committee.

67, Dhurrumtolla Street, Calcutta,
The 30th October 33

K. S. RAY,
Jt. Hon. Secretary,
Indian Medical Association.

The General Secretary has issued the following communique

The Xth All India Medical Conference will be held in Bombay the Xmas week of 1933.

Members of the Medical Profession are requested to attend the Conference and make it a success by personal attendance and reading papers of Medical interest. As it is not possible to send invitations to individuals, this general invitation through the public papers should be taken as personal invitations.

Further information can be had from Dr. D. D. SATHAYE, General Secretary, 127, Girgaum Road, Bombay 4.

X All Indian Medical & Sanitary Exhibition

Dear Sir,

We invite your attention to the Medical & Sanitary Exhibition which will be held in Bombay during the Christmas week, this year, in connection with the All India Medical Conference and the 26th All India Licentiate's Conference at Parel, Bombay.

We would emphasise the fact that this Exhibition affords a splendid opportunity to give your goods and products publicity and to increase your sales.

The Conference will be attended by all the men in the Medical profession from all over India. A large number of manufacturers has already indicated their desire to utilise this unique opportunity for advertisement and we suggest that, as the demand for accommodation is expected to be large, you may apply early for allotment of one or more stalls.

Full particulars are enclosed herewith and we hope to hear early of your co-operation in making the Exhibition a success.

Yours faithfully,

Dr. M. B. Thakore M.B., F.R.C.S.
Dr. M. F. Talati L.C.P.S.
Dr. Joshi Mirajvala L.C.P.S.
Jt. Hon. Secretaries.
Jt. Exhibition Committee.
Xth All India Medical Cnnference
and
26th All India Licentiate's Conference
127 Girgum Road,
Bombay 4.

Medical News and Notes

[Items of news and notes of general interest to the profession for incorporation in this section from the members of the profession will be greatly appreciated—EDITOR.]

In aid of Bombay Hospitals. A Fancy Fete, and an industrial Exhibition will be held in Bombay for three weeks from February 1, 1934, under the auspices of the Hospital Maintenance Funds Committee. Stalls, numbering about 450, will be divided into Indian, non-Indian and general sections.

It is expected that Lord Brabourne, Governor-Designate of Bombay, will open the Exhibition. A strong and influencial committee has been formed for the purpose.

The net proceeds of the Exhibition will be given to the Municipal and Government Hospitals, such as the G. T., K. E. M. J. J. and E. G. Hospitals.

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Panel system of Medical Relief in Karachi. The Sind Medical Union has formulated a scheme for a panel system of medical relief based on voluntary co-operative lines for giving medical relief to the Public.

According to the panel system people will be asked to contribute one Rupee per head to the Municipality and select their own doctors from among the doctors appointed by the Municipality as panel doctors. Each doctor will be paid twelve annas per head per year and he will attend to patients. Medicines will be dispensed at the Municipal dispensing stations established in various localities. Visiting charges of doctors will be at concession rates as fixed by the Municipality. The doctors under the panel system will, however, be permitted to treat the non-panel patients as private patients.

The scheme does away with the present system of public dispensaries where a single doctor attends a number of patients within a few hours giving them only hurried attention.

* * * * *

Nature's Bounty. The Lady Superintendent, Sebhraj Chetumal Maternity Home, New Sukkur, informs us that a Sindhi woman—a multipara—was delivered on 22. 8. 33 of a male baby weighing sixteen pounds, a novelty for an Indian child.

* * * * *

Tanjore Catholics on Birth Control Clinics. The Catholics of Tanjore at a meeting held on 18th October last under the Chairmanship of Rev. Father Motha Vaz supporting unanimously passed the following resolution :—

"That the Catholics of Tanjore Parish assembled in public meeting view with apprehension the remarks of the Hon'ble the Chief Minister to the Government of Madras at the last bugget session of the Legislative Council proposing the introduction of birth-control clinics and instruction in public hospitals, medical colleges and schools, as birth control otherwise than by self-control, is contrary to morality and religion, is subversive of character and checks the very foundations of society and family and requests the Government of Madras to refrain from introducing birth-control clinics and instruction in institutions under the control of Government or Local Bodies."

The meeting was attended by ladies also.

The Chairman in course of his address observed that birth-control was against the tenets of their religion and against the law of nature.

One of the speakers observed that birth-control would produce insanity and mental derangement which would do more harm to the people.

* * * * *

Eastern Bureau, League of Nations. It is gathered that the proposal of the Eastern Bureau of the Health Organisation of the League of Nations to establish international malaria courses in Singapore under the technical direction of the Medical College there has materialised. These courses will commence on 30th April 1934, the theoretical part of the work will be carried out in Singapore and the practical in other several Eastern countries so that the members of the course may have the opportunity to study field work in a country other than the one in which they are themselves working.

* * * * *

Milk-borne Diseases in Children. Consideration of milk-borne diseases in children occupied the serious attention of the main session of the first International Paediatric Congress held in Enland in August last.

It is generally agreed that various kinds of disease organisms coming from sick cattle and from sick human beings can be transmitted to man by means of milk. The danger was per-

petual and existed almost everywhere. Protective measures, as far as children were concerned, consisted in breast feeding, satisfactory control, so that milk came from healthy animals and was not afterwards infected with disease organisms, the destruction of infectious organisms by heating the milk,and striving after a method of handling which would not impair the milk.

Professor G. B. Allaria of Turin said there was always a debatable question between those who asserted the necessity of giving children raw milk and those who upheld the necessity of providing for bacterial purifying of the milk, even at the expense of its vital properties. In the present state of the dairy industry in most countries the latter was the more important, as the bacterial danger was the more serious.

This was supported by Professor F. Lerebullet of Paris, who contended that in the absence of such an elaborate and controlled organisation as would be necessary to improve general conditions of milk production and sales in all countries, so that safe milk for all children should be made available, the boiling of milk prior to consumption remained the sole measure which could be taken for protecting children from the dangers of this food.

Dr. J. M. Hamil, London, said that about 7 per cent of the milk samples taken in various towns in the country contained tubercle bacilli. Two thousand deaths, mostly children, occurred annually in this country from bovine tuberculosis, and there were a large number of cases of non-pulmonary tuberculosis of bovine origin which did not die from the disease but they were so affected that they might be sufferers throughout life. There was little likelihood within a reasonable time that we should be able to obtain a tubercle free raw milk supply. It would, therefore, be necessary to rely upon efficient pasteurization for a pure milk supply. But in addition to that, all efforts should be made to reduce disease in cattle. Pasteurization must be efficient, and such slight differences as might exist between raw and pasteurized milk were, in ordinary circumstances, non-appreciable as far as nutrition was concerned. In any case that would be outweighed by the immense advantage of safety.

* * * * *

English Doctors boycott German Pharmaceutical Products. According to the "Daily Herald" at a meeting in London attended by several hundred physicians and dentists, it was decided not to import any more German pharmaceutical product, scientific appratus and other medical requirements as a protest against the persecution of Jews and political opponents in Germany. A list of German pharmaceutical preparations with the corresponding British and American preparations is being circulated among British Physicians. According to Dr. M. Edel, Chairman of the British Medical Association, negotiations have already been started with chemical factories in England and America to induce them to prepare products which were up to this time furnished by Germany.

* * * * *

Rights of Quacks. During the trial at Old Bailey of an unregistered medical practitioner who was acquitted of the charge of obtaining money by false pretences with intent to defraud and was discharged, the Recorder, Sir Earnest Wild observed regarding the use of the term doctor by unqualified men preaching the healting art that "the medical practitioner had no monoply of the art of healing. It could not merely say "quack" to a man and rule him beyond the pale of healing the universe, though it might like to do so. There were plenty of unqualified men like Sir Herbert Barker who survived with great success the dislike of the medical profession. There were osteopaths and others who professed the art of healing in various directions who had as much right to treat patients as a qualified doctor so long as the public knew whom they were dealing with".

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Obituary. News has reached this country of the death of Sir Walter Morlay Fletcher, K.B.E., L.L.D., D.Sc., M.D., F.R.S., F.R.C.P., at the early age of 60 on June 7th following an operation.

He was the Secretary of the British Medical Research Council from 1914 up to the time of his death. But his name is more familiar to the medical profession in India, as the Chairman of the Medical Research Organisation Committee appointed by the Government of India in 1928 and as the author of the now famous and much quoted Fletcher Committee Report.

* * * * *

£ 25,000 Memorial to Doctor. The Middlesex Hospital is the fortunate recepient of the munificient gift of £ 25,000 from Mr. W. H. Collins, Chairman of Cerebos Ltd., being an expression of his gratitude to Dr. Webb-Johnson of this hospital who was instrumental in saving his life. The sum will be utilized for equipping the Radium Department of the hospital to be named after Dr. Webb-Johnson.

Mr. Collins believed the X-Ray Department would be the finest in the world. If it required more money to make it the finest he would be there to foot the bill.

The Bengal Nurses Bill, 1933

[Forwarded by the Secretary, Bengal Legislative Council to the Indian Medical Association for favour of an expression of opinion on the provisions of the Bill. —EDITOR]

A BILL

to provide for the registration and better training of nurses, midwives and health visitors in Bengal.

WHEREAS it is expedient to provide for the registration of nurses, midwives and health visitors in Bengal and to secure their better training ;

And whereas the previous sanction of the Governor General has been obtained under sub-section (*3*) of section 80A of the Government of India Act to the passing of this Act ; 5 & 6, Geo. V, c. 61 ; 6 & 7, Geo. V, c. 37 ; 9 & 10, Geo. V, c. 101.

It is hereby enacted as follows :—

Preliminary.

Short title, local extent and commencement.

1. (*1*) This Act may be called the Bengal Nurses Act, 1933.

(*2*) It extends to the whole of Bengal.

(*3*) It shall come into force on such date as the Local Government may, by notification, direct.

Definitions.

2. In this Act, unless there is anything repugnant in the subject or context,—

(*a*) "the Council" means the Council established under section 3 ;

(*b*) "notification" means a notification published in the *Calcutta Gazette* ;

(*c*) "prescribed" means prescribed by rules or regulations made under this Act ; and

(*d*) "register" means a register maintained under section 14, and "registered" means registered under the provisions of this Act.

Constitution of the Council.

Establishment and incorporation of the Council.

3. The Local Government may, by notification, establish a Council, to be called "The Bengal Nursing Council" for the purposes of carrying out the provisions of this Act ; and such Council shall be a body corporate and have perpetual succession and a common seal, and shall by the said name sue and be sued. [*Cf.* Ben. Act VI of 1914 s. 3.]

Constitution of the Council.

4. The Council shall consist of the following seventeen members, namely :— [*Cf.* Ben. Act VI of 1914 s. 4 ; Burma Act X of 1922, s. 3.]

(*a*) a President to be appointed by the Local Government ;

(*b*) the Principal, Medical College, Calcutta ;

(*c*) the Director of Public Health, Bengal ;

(*d*) the Principal, Carmichael Medical College, Belgachia ;

(*e*) the Surgeon-Superintendent, Presidency General Hospital, Calcutta ;

(*f*) the Lady Superintendent of Nursing, Medical College Hospitals, Calcutta ;

(*g*) the Superintendent, Dufferin Hospital, Calcutta ;

(*h*) the Nursing Superintendent, Dufferin Hospital, Calcutta ;

(*i*) the Matron, Presidency General Hospital, Calcutta ;

(*j*) the Lady Superintendent of Nursing, Sambhunath Pandit Hospital, Calcutta ;

Ex officio.

(*k*) one person to be elected by the Bengal Council of Medical Registration from among their own members ;

(*l*) one person to be elected by the Governing Body of the State Medical Faculty of Bengal from among their own members ;

(*m*) one registered nurse, one registered midwife and one registered health visitor to be elected by the registered nurses, midwives, and health visitors, respectively ; and

(*n*) two persons to be appointed by the Local Government to represent institutions for the training of nurses, midwives and health visitors :

Provided that in the case of the first constitution of the Council under this Act, one nurse, one midwife and one health visitor having such professional qualification as the Local Government may deem suitable, shall be appointed in the places of the registered nurse, midwife and health visitor, respectively, specified in clause (*m*) and any vacancy which may occur in the case of any member so appointed shall similarly be filled by the Local Government unless at least twenty-five nurses, midwives or health visitors, as the case may be, shall have been registered.

Appointment of members in default of election.

5. If any of the bodies of electors referred to in clauses (*k*), (*l*) and (*m*) of section 4 does not, by such date as may be fixed by the Local Government, elect a person to be a member of the Council, the Local Government shall, by notification, appoint to the vacancy a person qualified for election thereto; and any person so appointed shall be deemed to be a member of the Council as if he had been duly elected by that body. [*Cf.* Ben. Act VI of 1914, s. 5.]

Publication of names of members.

6. The name of every member appointed or elected under section 4 or section 5 shall be published by the Local Government in the *Calcutta Gazette*. [*Cf.* Ben. Act VI of 1914, s. 7.]

Leave of absence to members.

7. The Council may permit any member to absent himself from meetings of the Council for any period not exceeding six months. [*Cf.* Ben. Act VI of 1914, s. 8.]

Cessation of membership.

8. (*1*) An appointed or elected member of the Council shall be deemed to have vacated his seat— [*Cf.* Ben. Act VI of 1914, s. 9.]

(*a*) if he is absent without excuse sufficient in the opinion of the Council from three consecutive meetings of the Council;

(*b*) if he is absent out of India for any period exceeding six consecutive months.

(*2*) On the occurrence of any vacancy referred to in sub-section (*1*), the President of the Council shall forthwith report the fact of such vacancy to the Local Government, who shall thereupon, by notification, declare the seat to be vacant.

Filling of casual vacancies.

9. If any member dies or resigns his membership or ceases to be a member as provided in sub-section (*1*) of section 8, the vacancy shall be filled within one month of the notification of the vacancy by a fresh appointment or election, as the case may be, under section 4: [*Cf.* Ben. Act VI of 1914 s. 10.]

Provided that if any such casual election is not held within the said period, or if at any such election no member is elected, the Local Government shall, by notification, appoint to the vacancy a person qualified for election thereto:

Provided also that any person appointed or elected to fill a casual vacancy shall hold office only so long as the member in whose place the appointment or election is made would have held office.

Term of office of members.

10. (*1*) Subject to the provisions of sub-section (*1*) of section 8, and section 9, the term of office of members other than *ex-officio* members shall be three years. [*Cf.* Ben. Act VI of 1914, s. 11; Burma Act X of 1922, s. 3 (*2*), (*5*) and (*6*).]

(*2*) Any member shall be eligible for re-appointment or re-election at the end of his term of office.

(*3*) The powevs of the Council may be exercised notwithstanding any vacancy in the number of its members fixed by section 4.

Business of the Council and Committees.

Meetings of the Council and constitution of committees.

11. (*1*) The Council shall make regulations to regulate— [*Cf.* 9 & 10, Geo. V. c. 94, s. 3 (*1*); Ben. Act VI of 1914, s. 12.]

(*a*) the mode of transaction of business, including provision for decisions on emergent matters by the circulation of papers to members, and for co-opting persons specially qualified to advise on any particular matter before the Council:

(*b*) the times and places at which its meetings shall be held;

(*c*) the issue of notices convening such meetings;

(*d*) the conduct of business thereat; and

(*e*) the constitution of committees, the delegation to such committees of any powers or duties of the Council under this Act and the procedure of the committees (including quorum) in the transaction of business:

Provided that—

(*i*) no business shall be transacted at any meeting of the Council unless a quorum of eight members be present; and

(*ii*) save as provided in section 20, all questions arising at any meeting of the Council shall be decided by the votes of the majority of the members present and voting or in case of an equality of votes, by the casting vote of ths President of the Council or in his absence of the members presiding at the meeting.

(*2*) Until such time as the regulations referred to in sub-section (*1*) have come into operation, it shall be lawful for the President of the Council to summon a meeting at such time and place as to him seem expedient, by letter addressed to each member.

Payment of fees and travelling expenses to members.

12. There shall be paid to the members of the Council such fees for attendance at meetings of the Council or of committees of the Council and such reasonable travelling expenses for attending such meetings or for inspecting institutions as may from time to time be allowed by the Council and approved by the Local Government. [*Cf.* 9 & 10 Geo. V, c. 94, s. 4 (3); Ben. Act VI of 1914. s. 13.]

Establishment.

Registrar and office staff of the Council.

13. (*1*) With the previous sanction of the Local Government, the Council— [*Cf.* 9 & 10, Geo. V, c. 94, s. 4 (*1*) and (*2*); Ben. Act VI of 1914, s. 14.]

(*a*) shall appoint a Registrar,

(*b*) may grant leave to such Registrar and appoint a person to act in his place, and

(*c*) shall pay to the Registrar and to the person (if any) appointed to act in his place such salary and such allowances (if any) as the Council may determine.

(*2*) The Council may appoint such other officers and such clerks and servants as it may consider necessary for the purposes of this Act, and shall pay them such salary and such allowances (if any) as the Council may determine.

(*3*) The Registrar shall act as Secretary and Treasurer to the Council.

The registers of registered nurses, midwives and health visitors.

Orders by the Council for maintenance of registers of registered nurses, midwives and healtn visitors.

14. (*1*) The Council shall, as soon as conveniently may be after the commencement of this Act and from time to time as occasion may require, make orders for regulating the maintenance of a register of registered nurses, a register of registered midwives and a register of registered health visitors in several parts in which the persons to be registered shall be classified according to qualifications. [*Cf.* Ben. Act. VI of 1914, s. 15.]

(*2*) The said registers shall be kept in such form as may be prescribed.

Maintenance of the registers by the Registrar.

15. (*1*) The Registrar shall keep the registers in accordance with the provisions of this Act and of any orders made by the Council, and shall, from time to time, make all necessary alterations in the registered addresses or appointments and in the classification, of the registered nurses, midwives and health visitors and erase the name of any such nurse, midwife or health visitor who is dead. [*Cf.* Ben. Act VI of 1914, s. 16.]

(*2*) To enable the Registrar to fulfil the duties imposed upon him by sub-section (*1*) he may send through the post a letter to any person registered as a nurse, a midwife or a health visitor addressed to him according to his registered address or appointment, to enquire whether he has ceased to practise or whether his residence or appointmeni has been changed; and if no answer to any such letter is received within a period of six months from its despatch, the Registrar may erase the name of such person from the register in which it is entered:

Provided that any name erased under this sub-section may be re-entered in the register under the direction of the Council.

Erasure of names from registers on notice of death.

16. (*1*) Every Registrar of Deaths who receives notice of the death of any person whose name he knows to be entered in one of the registers, shall forthwith transmit by post to the Registrar of the Council a certificate of such death signed by him and stating particulars of the time and place of death. [*Cf.* Ben. Act VI of 1914, s. 28.]

(*2*) On receipt of—

(*a*) any such certificate, or

(*b*) any other reliable information regarding such death,

the Registrar of the Council shall erase the name of the deceased person from the register in which it is entered.

Erasure of fraudulent and incorrect entries in registers.

17. Any entry in the registers, which is proved to the satisfaction of the Council to have been fraudulently or incorrectly made, may be erased under an order of the Council. [*Cf.* Ben. Act VI of 1914, s. 24.]

Persons entitled to be registered.

18. The following persons shall, on payment of such fee as may be prescribed, be entitled to registration under this Act, namely :— [*Cf.* Burma Act X of 1922, s. 4(*a*).]

(*a*) nurses, midwives and health visitors who have undergone the courses of training, have passed the examinations and fulfil such further conditions as may be prescribed ;

(*b*) nurses, midwives and health visitors who are already in practice at the commencement of this Act and are not entitled to registration under clause (*a*) subject to such conditions and restrictions as may be prescribed :

Provided that nurses and midwives who at the commencement of this Act are enrolled on the registers maintained by the State Medical Faculty of Bengal shall be entitled to have their names transferred according to their qualifications to the appropriate parts of the respective registers to be maintained under this Act without being required to undergo further training and examination and without being required to pay fees.

Admission to register of persons trained in other parts of His Majesty's dominions.

19. On making an application in the prescribed form and on paying such fee, not being greater than the fee payable on ordinary applications for registration under this Act, as the Council may demand, any person shall be entitled to be registered under this Act who proves to the satisfaction of the Council that he has been registered either as a nurse, a midwife or a health visitor in any part of His Magesty's dominions outside Bengal in respect of which the Council is satisfied— [*Cf.* 9 & 10 Geo. V. c. 94, s. 6.]

(*a*) that there is in force therein an enactment, or a provision of any kind having the force of law, providing for the registration of nurses, midwives and health visitors under some public authority ;

(*b*) that persons registered under this Act are admitted to the register established under the said enactment or provision on terms not less favourable than those contained in this section ;

(*c*) that the standard of training and examination required for admission to the register of nurses, midwives or health visitors established under the said enactment or provision is not lower than the standard of training and examination required under this Act :

Provided that, notwithstanding any regulation made under clause (*c*) of sub-section (*1*) of section 31, no fee shall be chargeable for the registration under this section of a nurse midwife or health visitor whose name has been registered in a province in India between the Government of which and the Local Government the principle of reciprocity of registration has been accepted.

Refusal of registration, removal and re-entry of names.

20. (*1*) The Council may refuse to permit the registration of any person as a nurse, midwife or health visitor and when he is registered as a nurse, midwife or health visitor may direct the temporary or final removal of his name from the register of nurses, midwives or health visitors on any of the following grounds :— [*Cf.* Ben. Act VI of 1914, s. 17 prov.]

(*a*) that he has been sentenced by any court for any non-bailable offence, the sentence not having been subsequently reversed or quashed, and his disqualification on account of such sentence not having been removed by an order which the Local Government is hereby empowered to make, if it thinks fit, in this behalf ;

(*b*) that he has been guilty of any offence which in the opinion of the Council indicates professional incompetence, negligence, or contravention of regulations ordinarily included in the performance of the duties of nurses, midwives or health visitors ;

(*c*) that there are defects in his character which in the opinion of the Council would render the entry or retention of his name on the register undesireable :

Provided that no action shall be taken by the Council under this section until after due inquiry (at which the person concerned has been given an opportunity to be heard

in his defence and to appear either in person or by counsel, *vakil*, pleader or attorney, and which at the discretion of the President of the Council may be held *in camera*) he has been found, by a majority of two-thirds of the members present and voting at the meeting, to have been sentenced for any non-bailable offence specified in clause (*a*) or to have been guilty of an offence, or to have defects in his character, of the nature specified in clause (*b*) or clause (*c*).

(*2*) Any name so removed may afterwards be re-entered in the register and any order of refusal of registration passed under sub-section (*1*) may be withdrawn under the direction of the Council given by a majority of two-thirds of the members present and voting at the meeting.

Appeal from order under section 20.

21. Any person aggrieved by an order of the Council made under section 20 may, within three months from the date on which notice of such order is given to him, appeal to the Local Government against such order; and the decision of the Local Government on such appeal shall be final.

[*Cf.* 9 & 10 Geo. V, c. 94, s. 7(*1*); Ben. Act VI of 1914, s. 23.]

Registration under this Act not to qualify for registration under the Bengal Medical Act, 1914.

22. The certificate of registration under this Act shall not confer upon any person any right or title to be registered under the Bengal Medical Act, 1914, or to assume any title, name or designation implying that he is by law recognised as a medical practitioner, or that he is authorised to grant any medical certificate, or any certificate of death or still-birth, or to undertake the charge of cases of abnormality or disease in connection with parturition.

Ben. Act VI of 1914.

Institutions for training nurses, midwives and health visitors to be recognised by Council.

23. (*1*) Institutions that are approved and recognised by the Council after inspection by its representative shall be competent to train nurses, midwives or health visitors and to send them up for examinations for the qualifying certificates of the Council

(*2*) The Council may withdraw recognition from any such institution after its inspection by a representative of the Council.

Appeal against refusal to recognise training institutions.

24. Any person aggrieved by the refusal of the Council to approve and recognise any institution as competent to train nurses, midwives or health visitors, may, within three months from the date of such refusal, appeal to the Local Government against such order of refusal. The decision of the Local Government on such appeal shall be final.

[*Cf.* 9 & 10 Geo. V, c. 94, s. 7(*2*); Burma Act X of 1922, s. 7.]

Supervising Board.

25. (*1*) The Local Government may by notification appoint in every district a Supervising Board consisting of such members as may be specified therein to exercise subject to prescribed conditions and restrictions general supervision over nurses, midwives and health visitors within such district and to exercise and perform such other powers and duties as may be prescribed.

(*2*) Until a Supervising Board is appointed under sub-section (*1*) the Civil Surgeon of the district in consultation with the local authorities shall, subject to prescribed conditions and restrictions, exercise general supervision over nurses, midwives and health visitors within the district and to exercise and perform such other powers and duties as may be prescribed.

Disabilities of unregistered persons.

26. No person shall, without the permission of the Local Government, after the expiry of five years from the commencement of this Act, be employed in or by any dispensary, hospital, infirmary, or lying-in hospital, which is supported partially or entirely by public funds or local funds as a nurse, midwife or health visitor, unless he is registered under this Act or is under training in an institution recognised by the Council.

[*Cf.* Ben. Act VI of 1914, s. 31.]

Penalties.

Penalty for dishonest use of certificate, procuring registration by false means, and falsification of register or certificate.

27. Any person who—

(*a*) dishonestly makes use of any certificate of registration issued under the provisions of this Act to him or to any other person,

(*b*) procures or attempts to procure registration under the provisions of this Act by making or producing or causing to be made or produced any false or fraudulent declaration, certificate or representation, whether in writing or otherwise, or

[*Cf.* Burma Act X of 1922, s. 12.]

(*c*) wilfully makes or causes to be made any falsification in the registers maintained or the certificates issued under the provisions of this Act,

shall be punished with fine which may extend to three hundred rupees.

Penalty for unlawful assumption of title of registered nurse, registered midwife or registered health visitor.

28. Any person who, not being a nurse, midwife or health visitor registered under this Act, assumes or uses the name or title of registered nurse, registered midwife, or registered health visitor, or uses any name, title, addition, description, or sign-board, implying that such person is a registered nurse, a registered midwife or a registered health visitor, as the case may be, shall be punished with fine not exceeding one hundred rupees in the case of a first offence, and with fine not exceeding three hundred rupees in the case of a second or any subsequent offence. [*Cf.* Ben. Act VI of 1914, s. 29.]

Disposal of fees.

Disposal of fees.

29. All fees and other moneys received by the Council under this Act shall be applied for the purposes of this Act in such manner as may be prescribed. [*Cf.* Ben. Act VI of 1914, s. 22.]

Annual list of names.

Publication and use of annual list of registered nurses, midwives and health visitors.

30. (*1*) The Registrar shall, in every year, on or before a date to be fixed in this behalf by the Council, cause to be printed and published correct lists of the names for the time being entered in the several parts of the registers of registered nurses, midwives and health visitors, setting forth— [*Cf.* Ben. Act VI of 1914, s. 32.]

(*a*) all names entered in the several parts of the respective registers, arranged in alphabetical order according to surnames ;

(*b*) the registered address or appointment of each person whose name is so entered in the registers ; and

(*c*) the registered qualification of each such person and the date on which such qualification was certified.

(*2*) Every court shall presume that any person whose name is entered in the latest of such lists is duly registered under this Act, and that any person whose name is not so entered is not registered under this Act :

Provided that, in the case of any person whose name does not appear in such printed lists, a certified copy, signed by the Registrar, of the entry of the name of such person in a register of nurses, midwives or health visitors, shall be evidence that such person is registered under this Act :

Provided also that a certificate purporting to be signed by the Registrar, stating that the name of a person borne on the printed register of nurses, midwives or health visitors, as the case may be, has been removed from such register and specifying the date of such removal shall be evidence that such person is not registered under this Act and of the date from which he ceased to be so registered.

Regulations and rules.

Regulations by the Council.

31. (*1*) In addition to the power conferred by section 11, the Council may, with the previous sanction of the Local Government, make regulations— [*Cf.* Ben. Act VI of 1914, s. 33(*3*).]

(*a*) for regulating the courses of training for nurses, midwives and health visitors, the recognition of institutions competent to undertake such training, the conduct of examinations of trained nurses, midwives and health visitors and the remuneration, if any, of examiners ;

(*b*) for regulating the issue of certificates, the maintenance of registers and the conditions and restrictions of admission thereto under section 18 and for prescribing the form of application for such admission ;

(*c*) for prescribing the fees for admission to examination, for registration and for the re-entry of names erased or removed from the registers ;

(*d*) for regulating the publication of the lists of registered nurses, midwives and health visitors ;

(*e*) for regulating the payment of fees and travelling expenses to members under section 12 ;

(*f*) for regulating the expenditure of the Council and providing for the audit of their accounts.

(*2*) All such regulations shall be published in the *Calcutta Gazette*.

Rules by the Local Government

32. (*1*) The Local Government may make rules to carry out the purposes of the Act. [*Cf.* Ben. Act VI of 1914, s. 33(*1*).]

(*2*) In particular, and without prejudice to the generality of the foregoing power, the Local Government may make rules—

(*a*) to regulate elections under clauses (*k*), (*l*) and (*m*) of section 4 and to ensure that the term of office of all members elected at the first constitution or any re-constitution of the Council should begin on the same date ;

(*b*) to prescribe the qualifications of candidates for employment of Registrar ;

(*c*) to prescribe the form of the registers of registered nurses, midwives and health visitors to be maintained under section 14 ;

(*d*) to regulate, supervise and restrict within due limits the practice of registered nurses, midwives and health visitors ;

(*e*) to regulate the procedure to be followed by the Council—

(*i*) in conducting an inquiry referred to in the proviso to section 20 ;

(*ii*) in making a re-entry in the registers of nurses, midwives and health visitors of the names of persons removed from the respective registers and in withdrawing an order of refusal of registration passed on a nurse, midwife or health visitors ; and

(*iii*) in disposing of appeals from the decisions of the Council preferred under sections 21 and 24 ;

(*f*) to regulate the inspection of, and the manner of keeping registers of institutions referred to in section 23 ;

(*g*) to prescribe the powers and duties of, and the conditions and restrictions of general supervision by, the Supervising Boards and Civil Surgeon under section 25 ; and

(*h*) to regulate the application of fees levied under this Act and of other moneys received by the Council for the purposes of this Act.

(*3*) All such rules shall be published in the *Calcutta Gazette*.

Miscellaneous.

Certain persons to be public servants.

33. Every person appointed under sub-section (*1*) or sub-section (*2*) of section 13 shall be deemed to be a public servant within the meaning of section 21 of the Indian Penal Code. [*Cf.* Ben. Act VI of 1914, s. 14(*4*).] XLV of 1860.

Protection to persons acting in good faith.

34. No suit or other legal proceeding shall lie against any person for anything done or intended to be done in good faith under this Act. [*Cf.* Ben. Act VI of 1914, s. 27.]

Offences triable by a Presidency Magistrate or a Magistrate of the first class.

35. No Magistrate other than a Presidency Magistrate or a Magistrate of the first class shall try any offence punishable under thic Act. [*Cf.* Ben. Act X of 1932, s. 17.]

Cognizance of offences.

36. No magistrate shall take cognizance of any offence punishable under this Act except upon complaint made by order of the Local Government, or upon complaint made, with the previous sanction of the Local Government, by the Council. [*Cf.* Ben. Act VI of 1880, s. 30.]

Act not to apply to medical practitioners.

37. Nothing in this Act shall apply to medical practitioners possessing qualifications entitling them to registration under the Bengal Medical Act, 1914. [*Cf.* Burma Act X of 1922, s. 14.]

STATEMENT OF OBJECTS AND REASONS.

The object of this Bill is to improve the position of nurses, midwives and health visitors of all classes in Bengal by setting up a body to grant registration to those who have had approved training and thus to make it possible for registered nurses, midwives and health visitors to obtain recognition in other parts of India and the British Empire.

W. D. R. PRENTICE,
Member-in-charge.

CALCUTTA ;
The 4th July, 1933.

Notes on Clauses.

Clauses 3 and 4 contain provisions regarding the establishment and incorporation of the Bengal Nursing Council and its constitution.

Clauses 5 *to* 10 contain provisions as to the appointment, publication of names, leave, cessation of membership, filling of casual vacancies and term of office of members of the proposed Council. They are based on the provisions of the Bengal Medical Act,1914.

Clause 11 deals with the meetings of the Council and the constitution of committees.

Clause 12 provides for the payment to members of the proposed Council of fees for attendance at meetings and of travelling expenses.

Clause 13 provides for the appointment of and the payment of salary and allowances to a Registrar and such other officers and clerks as may be necessary for the maintenance of the registers of registered nurses, registered midwives and registered health visitors.

Clauses 14 *and* 15 provide for the maintenance of the registers in a form to be prescribed by rules. It is intended that the registers shauld show the name of each nurse, midwife and health visitor, her address or any appointment she holds, the date of her registration and the qualifications which entitle her to registration.

Clause 16 provides for the erasure of names from registers on notice of death

Clause 17 provides for the removal of names fraudulently or incorrectly entered in the registers.

Clause 18 which is based upon section 4 of Burma Act X of 1922 will enable persons who have undergone courses of training and persons who are already in practice to be registered under the provisions of this Act without being required to undergo further training and without being required to pay fresh fees.

Clause 19 will enable persons who are registered in any part of His Mejesty's dominions outside Bengal to be registered under the provisions of this Act if the Council is satisfied that the principle of reciprocity of registration has been accepted in such part of His Majesty's dominions provided that the standard required for registration under the proposed Act.

Clause 20 provides for refusal of registration and removal of names from the registers in certain cases and for re-entry of names.

Clause 21 provides for an appeal to the Local Government from an order made under proposed section 20.

Clause 22 directs that possession of a certificate of registration under the proposed Act will not qualify a person for registration under the Bengal Medical Act, 1914.

Clause 23 lays down that institutions which have been recognised by the proposed Council shall be competent to train nurses, midwives and health visitors and provides for the withdrawal of recognition from any such institution.

Clause 24 provides for an appeal to the Local Government against refusal by the Council to recognise training institutions.

Clause 25 provides for the appointment of a Supervising Board to exercise general supervision over nurses, midwives and health visitors in each district.

Sub-clause (2) provides that until a Supervising Board is appointed the Civil Surgeon of the district, in consultation with the local authorities, will execise such supervision.

Clause 26 prohibits the appointment in any dispensary, hospital, etc., which is suported by public funds or local funds of any person as a nurse, midwife or health visitor unless she is registered under this Act or is under training in a recognised institution.

Clause 27 *aod* 28 contain penalty provisions for dishonest use of certificates, procuring of registration by false means or unlawful assumption of the title of registered nurse, registered midwife or registered health visitor.

Clause 29 directs that the registration fees shall be applied in meeting the expenses of working the Act.

Clause 30 provides for the publication of an annual list from materials contained in the registers and gives the list evidential value. One proviso meets the case of a person being registered between the publication of two annual lists. The other proviso provides for the case of removal of a person from such register during this interval.

Clause 31 empowers the Council to frame regulations for working the Act.

Clause 32 gives power to the Local Government to make rules for carrying out the purposes of the Act.

Clause 33 declares every person appointed under this Act to be a public servant within the meaning of section 21 of the Indian Penal Code.

Clause 34 provides for protection of persons acting in good faith under the provisions of this Act.

Clause 35 declares that offences under this Act shall be triable only by a Presidency Magistrate or a Magistrate of the first class.

Clause 36 provides that cognizance of any offence under this Act is to be taken only upon complaint made by order of the Local Government or upon complaint made, with the previous sanction of the Local Government, by the Council.

Clause 37 declares that the provisions of this Act shall not apply to medical practitioners registered under the Bengal Medical Act, 1914.

———

Errata in September issue of J. I. M. A., 1933

1. P. 20, Col. I, 5th line from bottom for "and *a* fresh" read "and *no* fresh".
2. P. 20, Col. 2, last line
3. P. 27, table III (a)

   (i) Heading of table and
   (ii) First item of table

   } For "Sewaga" read "Seepage".

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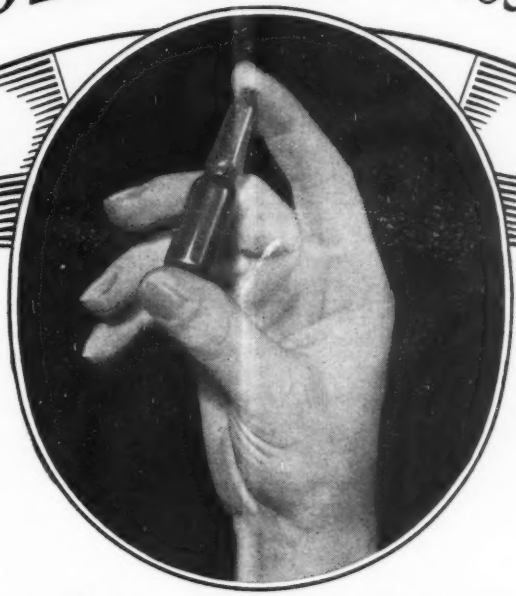

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